KEY ENVIRONMENTAL INCORPORATED

VIA FEDERAL EXPRESS

April 19, 2010

Mr. Christopher J. Kanakis
New Jersey Department of Environmental Protection
P.O. Box 028
401 East State Street, 6th Floor
Trenton, New Jersey 08625-0028

Re: Demolition Remedial Action Work Plan for Buildings 16, 19 & 20
Standard Chlorine Chemical Company Site
Kearny, New Jersey

Dear Mr. Kanakis:

On behalf of the Peninsula Restoration Group (the Group), please find enclosed the Demolition Remedial Action Work Plan (DRAWP) for Buildings 16, 19 & 20 at the Standard Chlorine Chemical Company, Inc. Site located in Kearny, New Jersey.

In accordance with your conversation with Mr. Gerry Coscia, three (3) copies of this document are provided to you. My certification as preparer of the DRAWP is included in the front of the document. Also included are certification statements from Margaret W. Kelly, Vice President and General Counsel of SCCC and Mr. David Rabbe, President, of Tierra.

The Group looks forward to continuing to work with the NJDEP to implement the IRAW. If you have any questions regarding this document, please feel free to contact Mr. Gerry Coscia of Langan Engineering and Environmental Services, Inc. (SCCC's Technical Representative) at (201) 398-4609 or Mr. Enrique Castro of Tierra at (732) 246-5852.

Should you require additional copies of this document in the future, please contact me at (412) 428-9387.

Sincerely,

James S. Zubrow
Principal Hydrogeologist

cc: E. Als – U.S. EPA
R. Webster – Eastern Environmental Law Center
K. Bell-Hosea – CEA, Inc.
M. Kelly – SCCC
E. Castro – Tierra
M. Brourman – Beazer
G. Coscia – Langan
N. Guerra - HCI

DEMOLITION REMEDIAL ACTION WORK PLAN

FOR

BUILDINGS 16, 19 AND 20

STANDARD CHLORINE CHEMICAL COMPANY, INC. SITE
KEARNY, NEW JERSEY

Prepared for:

Peninsula Restoration Group
(Standard Chlorine Chemical Co., Inc., Tierra Solutions, Inc.
And Beazer East, Inc.)

on behalf of
Standard Chlorine Chemical, Co., Inc.

Prepared by:

Key Environmental, Inc.
200 Third Avenue
Carnegie, Pennsylvania 15106

April 7, 2010

Exhibit "A"

CERTIFICATION
Pursuant to N.J.A.C. 7:26C-1.2

Regarding the *Demolition Remedial Action Work Plan for Buildings 16, 19 & 20 dated April 7, 2010* (collectively, including all enclosures, the "Submission") prepared by Key Environmental Inc. (Key) for the Peninsula Restoration Group on behalf of Standard Chlorine Chemical Co., Inc. (SCCC) and Tierra Solutions, Inc. (Tierra) (on behalf of Occidental Chemical Corp.), and submitted herewith by SCCC, pursuant to the October, 1989 Administrative Consent Order for the SCCC Site located in Kearny, New Jersey, and Tierra Solutions Inc. (on behalf Occidental Chemical Corp.), pursuant to the April 1990 Administrative Consent Order that includes the SCCC site and the former Diamond Site, both located in Kearny, New Jersey, the undersigned officer of Key, does state as follows:

"I certify, under penalty of law that I have personally examined and am familiar with the Submission and that the information provided in the Submission is true, accurate and complete. I am aware that there are significant civil penalties for knowingly submitting false, inaccurate, or incomplete information, and that I am committing a crime of the fourth degree if I make a written false statement that I do not believe to be true. I am also aware that, if I knowingly direct or authorize the violation of any statute, I am personally liable for the penalties."

KEY ENVIRONMENTAL, INC.

James Zubrow, P.G.
Typed/Printed Name

President
Title

Signature

April 7, 2010
Date

Sworn to and subscribed before me on this 7th day of April 2010.

Signature of Notary Public
(Stamp and Seal/Commission Expiration Date)

COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
Kelly V. Kobistek, Notary Public
Carnegie Boro, Allegheny County
My Commission Expires Apr. 15, 2010
Member, Pennsylvania Association of Notaries

CERTIFICATION
Pursuant to N.J.A.C. 7:26C-1.2

Based on the Certification attached hereto as Exhibit "A" of James S. Zubrow, President of Key Environmental, Inc. regarding the *Demolition Remedial Action Work Plan for Buildings 16, 19 & 20* (collectively, including all enclosures, the "Submission") dated April 7, 2010 for the Standard Chlorine Chemical Co., Inc. (SCCC) located in Kearny, NJ, the undersigned officer of Tierra Solutions, Inc. does state as follows:

"I certify, under penalty of law that I have personally examined and am familiar with the Submission and that the information provided in the Submission is true, accurate and complete. I am aware that there are significant civil penalties for knowingly submitting false, inaccurate, or incomplete information, and that I am committing a crime of the fourth degree if I make a written false statement that I do not believe to be true. I am also aware that, if I knowingly direct or authorize the violation of any statute, I am personally liable for the penalties."

TIERRA SOLUTIONS, INC.

David Rabbe
Typed/Printed Name

President
Title

Signature

April 7, 2010
Date

Sworn to and subscribed before me on this 7th day of April 2010.

Signature of Notary Public
(Stamp and Seal/Commission Expiration Date)

SAMMY SALEH
NOTARY PUBLIC, State of New Jersey
My Commission Expires July 31, 2012

200873

CERTIFICATION
Pursuant to N.J.A.C. 7:26C-1.2

Based on the Certification attached hereto as Exhibit "A" of James S. Zubrow, President of Key Environmental, Inc. regarding the *Demolition Remedial Action Work Plan for Buildings 16, 19 & 20* (collectively, including all enclosures, the "Submission") dated April 7, 2010 for the Standard Chlorine Chemical Co., Inc. (SCCC) located in Kearny, NJ, the undersigned officer of Standard Chlorine Chemical Co., Inc.. does state as follows:

"I certify, under penalty of law that I have personally examined and am familiar with the information submitted herein including all attached documents, and that based on my inquiry of those individuals responsible for obtaining the information, to the best of my knowledge, I believe the submitted information is true, accurate and complete. I am aware that there are significant civil penalties for knowingly submitting false, inaccurate, or incomplete information, and that I am committing a crime of the fourth degree if I make a written false statement that I do not believe to be true. I am also aware that, if I knowingly direct or authorize the violation of any statute, I am personally liable for the penalties."

STANDARD CHLORINE CHEMICAL CO., INC.

By: _____
Margaret W. Kelly, Esq.
Vice President

Sworn to and subscribed before me on this 15th day of April, 2010.

_____
Signature of Notary Public

LISA V. THOMAS
No. 01TH6077907
Notary Public, State of New York
Qualified in Kings County
My Commission Expires Sept. 29, 2010

(Stamp and Seal/Commission Expiration Date)

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GLOSSARY/ACRONYMS

The terms set forth below shall have the meanings assigned to them whenever initially capitalized in this Work Plan, including accompanying Tables, Figures and Appendices, unless the context clearly indicates a different meaning:

ACM	Asbestos Containing Materials
ACO	The Administrative Consent Order dated October 1989 entered into between the New Jersey Department of Environmental Protection and Standard Chlorine Chemical Co., Inc.
Beazer	Beazer East, Inc.
C&D	Construction and Demolition
CFR	Code of Federal Regulations
CIH	Certified Industrial Hygienist
Contractor	The entity retained under contract by the Peninsula Restoration Group for implementation of this Work Plan.
COPR	Chromium Ore Processing Residue
DAL	Daily Action Level
DCA	Department of Community Affairs
DHSS	Department of Health and Human Services
DOH	Department of Health
DOL	Department of Labor
Diamond Site	The former Diamond Shamrock chromate manufacturing facility located on property designated as Block 287, lots 46 and 47 and located at 1015 Belleville Turnpike, Kearny, Hudson County, New Jersey.
EPA	Environmental Protection Agency
EH&S	Environmental Health and Safety
Group	The Peninsula Restoration Group, which is comprised of Beazer East, Inc., Standard Chlorine Chemical Co., Inc. and Tierra Solutions, Inc., or any of the designated representatives of the Group or its affiliated companies.
HASP	Project-Specific Health and Safety Plan
Hot Work	Any work which utilizes or results in the generation of flame, sparks, or high heat, including but not limited to, welding and/or torch cutting.
IRM	Interim Remedial Measure
KEY	Key Environmental, Inc.
LBP	Lead-Based Paint
NJDEP	New Jersey Department of Environmental Protection
NJMC	New Jersey Meadowlands Commission
OSHA	Occupational Safety and Health Administration
Oversight Contractor	The entity retained by the Group to oversee the field operations of the Demolition Contractor for consistency with this plan, document the work and conduct air monitoring during demolition activities.
PPE	Personal Protective Equipment

SCCC	Standard Chlorine Chemical Co., Inc.
SCCC Site	A site of approximately 25- acres located on Belleville Turnpike, Kearny, Hudson County, New Jersey. The Site includes both property owned by SCCC located at 1035 Belleville Turnpike and designated as Block 287, Lot 50, and the adjacent property owned by Standard Naphthalene Products, Inc. (SNP) located at 1015-1025 Belleville Turnpike and designated as Block 287, Lots 48, 49, 51, 52 and 52R.
SNP	Standard Naphthalene Products, Inc. is an inactive subsidiary of SCCC
SSSAP	Site-Specific Sampling and Analyses Plan
Subcontractor	Persons having a contract with the Contractor for any portion of the work
Tierra	Tierra Solutions, Inc.
USEPA	United States Environmental Protection Agency

1.0 BACKGROUND

The purpose of this Demolition Remedial Action Work Plan (DRAWP) is to set forth the scope and specific requirements for a project (the "Buildings 16, 19 and 20 Demolition Project" or the "Demolition Project") involving demolition of three dilapidated buildings located in the eastern area (Block 287, Lot 49) of the Standard Naphthalene Products Co. Inc. (SNP) property at the 25-acre Standard Chlorine Chemical Co., Inc. (SCCC) Site. Figure 1 provides a site location map for the SCCC Site. Figure 2 shows boundaries of the SNP and SCCC properties and the locations of the structures scheduled for demolition. Table 1 provides pertinent building details.

The SCCC Site consists of approximately 25 acres of several parcels owned by two related entities. SNP, a wholly-owned subsidiary of SCCC, owns Block 287, Lots 48, 49, 51, 52 and 52R (collectively, the SNP Property), located at 1025 Belleville Turnpike and consisting of approximately 16.6-acres. SCCC owns Block 287 Lot 50 (the SCCC Property), located at 1035 Belleville Turnpike and consisting of approximately 8 acres located in the southwestern portion of the Site.

Manufacturing operations were conducted on the SNP property between 1916 and approximately 1980. Records indicate that chemical processing activities conducted on the SNP Property took place exclusively on Lot 49, which includes buildings 16, 19 and 20. Lot 49 also was the location of some storage, packaging, and warehouse activities.

SNP operations on Lot 49 involved subliming (the conversion of liquid naphthalene to gas to solid) in a subliming chamber; and the flaking, crushing and balling of the solid naphthalene. The only raw material used in these processes was pure refined petroleum naphthalene. Buildings 19 and 20 were known to be used for flaking, and Building 16 was known as a chipper building.

Other historical manufacturing-related activities conducted on Lot 49 included converting refined naphthalene and paradichlorobenzene into various solid forms, manufacturing naphthalene disinfectants, and storing finished goods (naphthalene, sulphur candles and disinfectants).

In October 1989, SCCC and the NJDEP executed an Administrative Consent Order (ACO) under which SCCC agreed to undertake certain Interim Remedial Measures (IRMs), and the investigation and remediation of the Site. Since that time, various remedial investigations and IRMs have been implemented at the Site under the SCCC ACO. In April 2003, the EPA proposed adding the Site to the National Priorities List (NPL) established under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund), 42 U.S.C. §§ 9601 *et seq*. The Site subsequently was added to the NPL in September 2007.

An Interim Response Action Workplan (IRAW) for the Site was prepared by Key Environmental, Inc. (KEY) and subsequently approved by NJDEP on March 31, 2008. IRAW

activities are scheduled for completion in 2010 and include installation of a slurry wall around the perimeter of the Site and adjacent Diamond Site and steel sheet pile wall along the river frontage of the two properties. The IRAW project will require the demolition of Building 20. A similar adjacent building (Building 19), and the remnants of a smaller building (Building 16) in the vicinity in this work are also included in this IRAW Demolition Project.

Chromium Ore Processing Residue (COPR) generated at an adjacent facility was placed as fill over most of the Site prior to 1960. Various Interim Remedial Measures (IRMs) have been completed at the Site to address COPR-related issues. The existing COPR IRMs include a surface cover (e.g., asphalt, stone, geotextile, geomembrane, and/or soil) in several areas that constitute a large percentage of the Site acreage. The COPR IRMs were completed to eliminate the potential for direct human contact with the underlying soils. The integrity of the COPR IRMs must remain intact during, or be restored in an expeditious manner following, implementation of the proposed demolition. Also, the Site is currently fenced, so that entry to the Site is restricted to authorized persons.

In 2004, under contract to KEY, Omega Environmental Services, Inc. (Omega), a New Jersey firm specializing in, and licensed for, building inspection and asbestos evaluation, performed a lead-based paint assessment and an asbestos containing material (ACM) survey of all the buildings on the SCCC Site. The results of the paint assessment indicated that lead-based paint was not present; the results of the ACM survey are summarized in Table 2.

In 2006, the NJDEP adopted a more sensitive test method called Transmission Electron Microscopy (TEM) for analyzing Category I non-friable ACM where Polarized Light Microscopy (PLM) analysis findings indicate that a sample contains less than or equal to 1 percent (%) ACM or where a sample is found to contain no asbestos. In 2009, additional suspected ACM samples were collected for certain Category I non-friable materials and analyzed by TEM. The data for Buildings 16, 19 add 20 are included in this document. ACM identified by both PLM and TEM methods have been incorporated into a building specific list and presented in Table 2.

Additionally, EPA has identified an oversight role for building caulking materials that may contain Polychlorinated biphenyls (PCBs). The PCB-containing caulk has been identified as being used in many masonry buildings around the United States at concentrations of up to 15,000 ppm. As such, caulking from the SCCC buildings was sampled for PCBs to determine whether PCBs are prevalent in the SCCC buildings. No PCBs were detected in the caulk samples collected from Buildings 16, 19 and 20. The analytical results are summarized in Table 3.

Pursuant to the direction of the NJDEP Case Manager for the SCCC Site, SCCC has been directed to obtain Waste Classification Determinations from the Bureau of Landfill and Hazardous Waste Permitting of the NJDEP's Solid and Hazardous Waste Management Program (the Waste Classification Unit) for the various types of construction and demolition materials. Waste classification and material reuse forms were previously prepared for an ACM and demolition project performed on a separate lot in 2005. Based upon the characterization data, the NJDEP determined that the materials were considered a non-hazardous waste and classified

as ID27 Dry Industrial Solid Waste. KEY expects that a similar determination would be provided for Building 16, 19 and 20 materials upon characterization. To confirm this assumption, KEY has prepared and identified waste types (e.g., ACM, concrete/brick/masonry, wood and glass) as part of pre-demolition activities and submitted a Site-Specific Sampling and Analyses Plan (SSSAP) to the NJDEP Waste Classification Unit on February 12, 2010. The SSSAP was prepared to incorporate the requirements of the Waste Classification Request Form Guidance HWM-009.[1] Following completion of the SSSAP-identified activities, and following receipt of a subsequent NJDEP-issued waste classification determination for the Building 16, 19 and 20 materials, the disposal location of the ACM, construction and demolition (C&D) debris and other wastes resulting from this Demolition Project will be finalized.

The sampling was completed in February 2010 in accordance with the SSSAP and the results are provided in Table 4. The results indicate that the materials sampled would be classified a non-hazardous waste for disposal rather than reuse purposes.

[1] NJDEP Division of Solid and Hazardous Waste's "Waste Classification Request Form" (HWM-009), Dated June 22, 2009."

2.0 GENERAL REQUIREMENTS

This section outlines the General Requirements for the Demolition Project. A professional licensed asbestos abatement and demolition contractor(s) (Contractor) will complete the ACM removal and Demolition Project activities. The Contractor will provide all construction management, labor, materials, equipment, tools, supervision, insurance, taxes, loading, unloading, hauling, project management and all things necessary (unless otherwise noted) to complete project in accordance with this Scope of Work. The work will be performed in accordance with applicable environmental and health and safety requirements, and the associated contract documents.

The general requirements for the project include the following:

- Prepare a Site-specific Health and Safety Plan (HASP) meeting the requirements of 29 CFR 1926.65;
- Obtain any and all necessary permits, notifications, and approvals prior to initiating any regulated activities on the property;
- Properly remove asbestos containing materials (ACM) per the Asbestos Abatement Work Plan in Appendix A;
- Demolish, dismantle, and/or remove all designated buildings and building contents to slab on grade;
- Segregate any assets and wastes which have been designated for separate management, recycling/reuse, and/or disposal (e.g., ACM/transite, concrete/brick/masonry, wood, glass, structural steel, etc.);
- Fill and cap any underground piping (e.g., conduits, sanitary lines, storm drain pipes, etc.) observed in the work area;
- Complete air monitoring in accordance with the Air Monitoring Plan (AMP) included herein as Appendix B and a site-specific Health and Safety Plan (HASP);
- Recycle appropriate materials including scrap metallic material (steel, wire, etc.) in accordance with the USEPA preference for recycling/re-use versus landfilling or combustion. The scrap metal will be transported off-Site to an approved metals recycler. Wastes and the concrete/brick/masonry materials will be disposed at an approved facility;
- Clean and restore work areas after demolition to a pre-demolition condition; and,
- Protect, maintain, or repair as necessary, existing utilities and infrastructure affected by the Demolition Project.

Details are provided in the following sections.

3.0 BUILDING DESCRIPTIONS

The demolition activities associated with Buildings 16, 19 and 20 include the removal of three (3) dilapidated and unused buildings located on Lot 49. The buildings and associated building numbering referenced herein are presented on Figure 2. Table 1 provides a summary of relevant building information, including a description of the former use of the building, the building footprint areas, presence of ACM, types of recyclable building materials, and types of construction and demolition debris.

As previously discussed, industrial activities on Lot 49 and the other portions of the SNP property ceased in approximately 1980. Lot 49 of the SNP property is where Buildings 16, 19 and 20 are located and where chemical processing activities are known to have been conducted. The three buildings were used solely in naphthalene manufacturing operations. The following paragraphs provide descriptions of the building and their contents.

Building 16

Building 16, erected in the 1950s, is a 2-story, approximately 650-square feet (sf), transite-sided open-ended (on two sides) building located in the western portion of Lot 49, just south of Building 15. On the eastern open-end, portions of the siding are missing and a portion of the roof is no longer intact. The open ends of the building have supports for the roof, but do not have typical wall supports. This indicates that the building was designed to be open on each end. In a 1958 document, this building was identified as a "Chipper Building." This building contains several concrete equipment pads, is currently empty, and appears to have been constructed as an open-ended building with only one internal wall. Demolition of this building is proposed because it is empty, small, and appears to be potentially structurally unstable. Demolition is proposed as an alternative to closing the building openings under the potential EPA Removal Action, because the effort required to close the openings is greater than the demolition effort. Demolition at this time also eliminates any concerns associated with the instability of the structure.

An outdoor conveyor belt is present that connects from Building 15, to building 16, and then to Building 17. The conveyor belt will be disconnected and removed as part of the Building 16 Demolition Activities.

Buildings 19 and 20

Buildings 19 and 20 are identical, 1½-stories in height, and approximately 4,000 sf in area. They are cement block buildings with cement floor pads located in the northeastern corner Lot 49. Buildings 19 and 20 were constructed in the mid-1960s in the footprint of a single larger building, the "subliming building", which had been destroyed in a fire. Buildings 19 and 20 also were utilized by SNP for "Naphthalene Flaking" until approximately1980. The buildings are currently empty with the exception of a small amount of debris and some doors. To allow for the installation of the barrier wall system component of the IRAW, it will be necessary to demolish Building 20. While demolition of Building 19 is not absolutely necessary to provide for installation of the barrier wall, demolition of this building is proposed because it is nearly identical to Building 20, both in structure and also in historical use; as such, demolition of both buildings during a single mobilization appears to be most practical and cost-effective. The roof systems for Buildings 19 and 20 have been tested and have been determined to contain ACM and are in disrepair.

4.0 PROJECT PLANS

4.1 CONTRACTOR PROJECT PLAN

The Contractor will prepare a Project Plan as part of their proposal that discusses the major tasks, proposed methods of demolition and dismantling including the equipment expected to be used on-site (e.g., excavator with grapple or hoe ram), a milestone schedule detailing the sequencing of the work, and locations of equipment lay down, clearing, temporary fencing, scrap preparation, and material staging. The Project Plan shall identify the measures to be taken during demolition activities to protect remaining structures including, but not necessarily limited to: monitoring wells, fencing, buried stormwater pipe, nearby buildings, existing Interim Measures, COPR IRMs, and utility poles. The Project Plan will also include details on spill prevention, control and countermeasures.

4.2 ASBESTOS ABATEMENT WORK PLAN

The Contractor will incorporate into their Project Plan the attached Asbestos Abatement Work Plan (Appendix A). The Asbestos Abatement Work Plan was prepared by a licensed Asbestos Project Designer - Omega Environmental Services Inc. (Omega) located in South Hackensack, NJ. The Asbestos Abatement Work Plan details contractor-specific work procedures for proper removal of the ACM from the three buildings, health and safety, licensing, training, air monitoring, waste disposal and other requirements and methods needed to comply with the applicable asbestos regulations, and to protect workers on-Site. If the Contractor desires modification to the Asbestos Abatement Work Plan, the Contractor will retain a licensed ACM Project Designer to revise the plan as needed. Any changes or proposed alternative methods will be submitted to Owner or Owner's Representative in writing and subject to the Owner's approval prior to the site work.

4.3 AIR MONITORING PLAN

The Contractor will incorporate into their Project Plan the attached Air Monitoring Plan (Appendix B). Air monitoring will be performed throughout ACM removal and demolition activities accordance with the schedules and methods described in the Air Monitoring Plan. The air monitoring program includes real-time dust monitoring, and ambient air sampling for ACM fiber. The air monitoring plan also specifies the response actions to be taken in the event that Daily Action Level (DAL) is exceeded. Air monitoring will be conducted by the Group's Oversight Contractor or by the Contractor.

4.4 SITE-SPECIFIC HEALTH AND SAFETY PLAN

The Contractor will prepare a site-specific HASP to address the requirements of their employees and detail the minimum levels of PPE and types and frequency of personal air monitoring required. The Contractor prepared HASP shall also detail the following:

- Site features;
- Potential chemical exposure and protection scenarios including lead in construction;
- Site-specific hazard and risk assessments for site tasks and operations;
- Site-specific Personal Protective Equipment (PPE), training, and any necessary medical surveillance requirements;
- Site control measures;
- ACM awareness training for demolition equipment operators;
- Decontamination procedures; and
- Emergency response planning including local emergency numbers and a hospital route map.

The Contractor shall prepare the HASP to also address the following items specific to demolition activities, including but not limited to:

- Demolition regulations in accordance with 29 CFR 1926.850-860 including an engineering survey for each building;
- Lead found in bolts anchoring transit panels in construction as required by 29 CFR 1926.62;
- Asbestos abatement;
- Nuisance dust control and dust suppression, if needed;
- Torch cutting and other hot work;
- Fall Protection;
- Electrical safety, including discussion of lock-out, tag-out, testing, and verification of de-energization;
- Operation of construction equipment;
- Roof access/work, if needed or applicable;
- Ambient air quality (NESHAPS), as applicable
- Universal waste including potential PCBs in light ballasts and fluorescent lamps; and,
- Visitor orientation and access restrictions to ACM removal and demolition work areas.

All Contractor and Subcontractor employees working on-site shall have completed OSHA 40-Hour HAZWOPER Training with up to date refreshers, and shall take part in a medical monitoring program appropriate for Site activities per 29 CFR 1926.65 Hazardous Waste Operations and Emergency Response Regulations and per the 29 CFR 1926.62 Lead standards. The Site-specific Health and Safety Plan shall be submitted to SCCC for review a minimum of fourteen (14) days prior to initiating site demolition or ACM removal activities.

4.5 LEAD MANAGEMENT

The lead survey indicated that no regulated lead-based paint is present in the buildings slated for demolition. Based on observations during previous inspections of other buildings on the Site, however, lead-based paint may be contained in building walls, siding and structural steel. The

Contractor is responsible for detailing in the Project Plan methods for protecting the Contractor's employees, the environment, and the site soils with respect to lead.

Lead has been identified on the bolts holding up the transite panels on Buildings 16. Any removed lead shall be placed in an appropriate container for subsequent disposal or reclamation. Removal of the bolts or lead shall be by hand tool methods, with appropriate PPE, to reduce potential lead exposure to workers. The lead management information shall also include the appropriate proposed disposal/recycling/scrap facilities and any special disposal methods, as needed.

4.6 SITE-SPECIFIC SAMPLING AND ANALYSES PLAN AND WASTE CLASSIFICATION FOR BUILDING MATERIALS

Key Environmental, Inc. (KEY) prepared and submitted to the NJDEP on February 12, 2010 a SSSAP designed to characterize Building 16, 19, and 20 materials. Information generated for the SSSAP will be used to appropriately classify the building materials for final disposition in accordance with the requirements of the Waste Classification Request Form Guidance HWM-009.[2]

The SSSAP identified estimated building material quantities, proposed analytical suites, sampling methodologies, discrete and composite sample quantities, and quality assurance and quality control methodologies. As per NJDEP Guidance, the SSSAP also included plans for biased sampling based on visible staining or other indications of potential chemical impact. Samples were collected in February 2010. The analytical results of the material characterization are presented in Table 4 and are provided to the Contractor to assist in their evaluation of waste disposal.

The sampling results shown in Table 4 indicate that the materials would be considered non-hazardous waste for disposal, and not reuse, purposes. SCCC will prepare and submit Waste Classification Forms HWM-009 for each material group identified for determination. The draft waste classification forms will be provided to the Contractor for reference to assist in their evaluation of waste disposal. Final waste classification determinations will be provided to the Contractor upon receipt and incorporated into the contract for final management of the materials.

Buildings 16, 19 and 20 contain varying small quantities of potential recyclable concrete and masonry materials which SCCC usually considers for recycling or beneficial reuse. However, SCCC determined that the concrete/masonry and brick materials that would normally be a candidate for on-site reuse or recycle will be disposed at an appropriate off-site facility, so as not to interfere with the near term IRAW implementation activities.

[2] NJDEP Division of Solid and Hazardous Waste's "Waste Classification Request Form" (HWM-009), Dated June 22, 2009."

5.0 PERMITS/APPROVALS

The Contractor will apply for and obtain all necessary permits, complete all notifications, and obtain all necessary approvals for the project. Several permits and notifications would typically be required for completion of demolition and ACM abatement activities in the State of New Jersey. However, since the SCCC Site is listed on the (NPL), CERCLA permit exemptions may apply, and all appropriate or relevant and appropriate requirements (ARARs) would apply. This section assumes that local and state permits, notifications and approvals will be obtained.

The asbestos abatement contractor would be responsible for all project filings, including potential variances, pertaining to the scope of work, including:

- EPA NESHAP notification;
- Department of Labor (DOL);
- Department of Health and Senior Services (DHSS);
- NJDEP notifications; and,
- Local Building Department asbestos/demolition permits.

A NJMC commission zoning permit is required for placement of a temporary construction trailer. A temporary construction trailer, temporary water hook-up, and a temporary electrical drop may be completed by others as part of the IRAW implementation. NJMC approval may also be needed for temporary electrical connection of the trailer. The town of Kearny will likely require a demolition permit as well as a permit for a local water and electric hookups.

Regardless of NJDEP or ARAR applicability, in addition to the above listed filings, the asbestos contractor would be requested to provide the following:

- Copies of individual worker & supervisor licenses;
- Copies of company asbestos license;
- Copies of worker medicals & respirator fit-tests;
- Name/license# of designated asbestos waste hauler & disposal facility; and,
- Local building/demolition and asbestos removal permits and notifications.

6.0 OVERVIEW OF PRE-DEMOLITION ACTIVITIES

The Contractor or Group's Oversight Contractor will complete a number of pre-demolition activities that will facilitate the Demolition Project and the ACM removal project. Pre-demolition activities to be completed prior to commencement of demolition include, but are not limited to:

- Perform preparatory operations including the engineering survey in accordance with OSHA 1926.850;
- Verify utilities to the buildings have been isolated and air gapped, and mark-out items requiring protection (e.g., monitoring wells, stormwater piping, catch basins, stormwater line, etc.);
- Complete pre-project background air monitoring as identified in the Air Monitoring Plan attached as Appendix B;
- Obtain temporary utilities for the Site trailer and for project completion, if needed;
- Complete a field verification and walk through inspection (Section 7.0);
- Remove universal wastes from the buildings, if any, prior to demolition. Any universal wastes will be collected and temporarily and properly stored for future disposal at an approved TSD facility following removal and inspection prior to demolition;
- The Contractor shall note universal waste items that will be removed prior to demolition, if any;
- Remove the limited brush and saplings near Building 16 to provide access, if required;
- Protect any storm drains and catch basins in the work area, and/or in adjacent areas, with a cover of geotextile and, if necessary, install straw bales during demolition. Locations with installed geotextile will be inspected after rain fall and replaced when necessary. Any concrete piles and/or debris piles awaiting final handling will be covered and/or surrounded by adjoining hay bales to reduce potential of run-off of fines from the piles;
- Wet down building materials before demolition to reduce the potential for dust generation and so as to not affect air monitoring;
- Remove ACM in accordance with the ACM Removal Plans and complete air monitoring;
- Complete waste profiles and obtain disposal facility approval for the materials; and,
- Mobilize spill response materials to the Site for use in the unlikely event of a potential equipment hydraulic oil leak and/or potential fuel spill during operations.

7.0 FIELD VERIFICATION AND WALK THROUGH

Figure 2 shows the location of Buildings 16, 19 and 20 along with the approximate locations of utility poles, underground utilities lines (e.g., significant stormwater piping). All quantities quoted in the scope of work and specifications are rough estimates provided as reference values. As such, the Contractor is required to complete a walk-through to verify the information provided and/or to identify any discrepancies. The Contractor will also identify any potential field conditions that may require specialized equipment or additional measures of a potential safety concern. Items/areas that require protection, such as utilities and IRMs, are discussed in Section 8.0.

The Group or Group's Oversight Contractor will contract a Professional Engineer (P.E.) licensed in New Jersey to inspect the existing building conditions prior to initiating abatement activities. The Professional Engineer will prepare a letter report identifying any issues regarding the structural integrity of the buildings to be removed. The report, if necessary, may highlight any abatement or demolition requirements that may arise, primarily associated with worker safety and soundness of the structure(s). Similar to the previous abatement and demolition of Building 6 in 2005, the roofs of Building 19 and 20 appear to be corroded, and structural integrity is in question. If the roofs are deemed unsafe for access, a Professional Engineer may declare the structure un-safe and the roof will be brought to the ground and source-separated for disposal. This procedure is common for dilapidated unsound structures and has been incorporated into the ACM removal plan. The Contractor shall assume in their estimate that the asbestos abatement of the roofs for Buildings 19 and 20 will be performed on the ground.

8.0 ITEMS TO BE PROTECTED

The following bullets identify the items and specified means of protection during site work activities.

- Storm Sewers – A shallow storm sewer line is located adjacent and to the north of the Building 19 and 20 along the property line of the Diamond Site and SCCC Site. The Contractor will be required to protect the storm sewer line from excessive equipment loads during Site work activities, including but not limited to, using smaller equipment or covering the stormwater alignment or spreading the equipment loads using large metal plates or timber mats.

- The Contractor will be required to protect storm sewers by placing geotextile filter fabric under the catch basin covers. The geotextile will be approved by the Group's Oversight Contractor and will be similar in nature to silt fence material. The filter fabric will be installed to capture any particulate matter that may be transported to the storm during demolition activities or precipitation events. (In order to provide additional protection from storm water runoff from the Demolition Project Site the Contractor will be required to install a silt fence barrier around the building areas). Inspection of these filters will be completed after all significant dust suppression activities or immediately after each rainfall event. The Contractor will routinely inspect and replace damaged filter fabric and/or hay bales. Materials accumulated collected and disposed with other debris, as necessary. Hay bales (secured by ballast) may also be used if the filter fabric becomes frequently clogged, or for debris control.

- Nearby Buildings – The Contractor will protect nearby buildings that are not scheduled for demolition as part of this Demolition Project. These buildings include Buildings 15, 17, 18 (with associated empty tanks immediately west of the building) and 21.

- Any roof drains observed to be present will be cut flush to grade, and the stand pipe will be filled and completed flush to grade with a concrete seal.

- Paved Areas – The Contractor will protect nearby paved areas and the river from direct runoff from the debris generated during demolition. Media such as hay bales or silt fence, covers, or an approved equal, will be installed by the Contractor to protect the runoff and to reduce transport of fines.

- Monitoring wells located in the vicinity of the demolition areas will be protected by traffic cones at all times (unless protected by existing bollards). If monitoring wells are damaged during the Demolition Project, replacement in kind will be the responsibility of the Contractor.

- Perimeter fencing surrounds the project area. Except as described in Section 10.0, existing perimeter fencing shall remain intact. If damaged during the Demolition Project, the Contractor will restore in kind any existing perimeter fencing.

- If damaged during the Demolition Project, the Contractor will restore in kind any existing surface cover or asphalt pavement.

- The existing COPR IRMs which include a surface cover (e.g., asphalt, stone, geotextile, geomembrane, and/or soil) that provides a barrier to direct contact with the COPR will be protected and maintain throughout the project. If damaged during the Demolition Project, the Contractor will restore in kind any existing IRM.

9.0 SITE WORK

During Site work, the Contractor will comply with all applicable requirements, with particular emphasis on those occupational health and safety requirements intended to prevent potential accidents; injuries or illnesses to persons; damage to property; or environmental impacts. The Contractor will take necessary precautions for the safety of persons engaged in the work including its employees, the employees of any Subcontractors, or any other authorized person. The Contractor will conduct daily safety meetings and will address, at a minimum, the daily work activities, monitoring, personal protection equipment (PPE), and other safety topics or concerns that may arise during the project. A project health and safety officer will be assigned by the Contractor for the duration of the project, and the office will be responsible for overseeing the safety program during ACM abatement or demolition activities. The Contractor's project-specific HASP will define the criteria for any potential upgrades of PPE for dermal and/or respiratory protection.

While "hot work" (e.g., torch cutting) is not expected to be necessary to prepare the buildings for demolition, torch cutting may be employed on-site for sizing the steel for off-site recycling. Specific requirements are applicable in the event that hot work is necessary. Hot Work permits will be required to be followed for torch cutting activities, and hot work permits will require fire watch practices. The Contractor will verify that conditions are safe for hot work prior to performing Hot Work on any piping or steel.

The Contractor is responsible for providing adequate PPE for its employees and subcontractors for any activities to be conducted as part of the scope of work and any amendments. Site visitors will be expected to don requisite PPE if in areas of concern and/or as specified in the Contractor's Site-Specific HASP. Failure to comply with these safety rules by any person will be grounds for immediate removal from the Site.

Proper traffic management procedures will be followed by the Contractor while crossing or working on or near public roads. Proper protection of nearby roads shall be maintained, as necessary, to reduce the potential for significant damage to the road surface. The Contractor shall also minimize, to the extent practicable, the tracking of soil, dirt or other potentially impacted materials by equipment used on the Demolition Project on to "clean areas" of the Site. Temporary Site facilities to be constructed prior to demolition activities will include an equipment decontamination and tracking pad at the access to Lot 49. The decontamination and tracking pad will be constructed to facilitate cleaning of equipment and trucks prior to leaving the Site. The decontamination and tracking pad will be constructed using a 10-oz/sy filter fabric for reinforcement and separation, aggregate base, and a collection sump for decontamination fluids. The Contractor will recover decontamination fluids, temporarily store on-site as needed and dispose at an approved off-site facility.

Portions of the Site surrounding Buildings 16, 19 and 20 contain weeds, bushes and saplings that limit access. Consequently, some clearing operations in the proposed demolition area will be completed to provide site access for equipment and personnel. As noted in Section 8.0, during demolition the Contractor will be required to protect storm drains and catch basins in the work

area with geotextile or hay bales, and/or in adjacent areas that could potentially be impacted by runoff from dust suppression activities or precipitation events. The locations of the protective measures will be inspected after precipitation events and repaired or replaced as necessary. In addition, the Contractor will be required to mobilize spill response materials to the Site for use in the unlikely event of a potential equipment hydraulic oil leak and/or potential fuel spill.

The Contractor may be required to temporarily remove sections of the perimeter fence that surround the Demolition Project to allow for equipment and personnel access to the Site during the project. The Contractor will be required to replace sections of the fence removed upon completion of the ACM Abatement or Demolition portions of the project. ACM removal areas will be cordoned off during work.

9.1 PROJECT FACILITIES

The Contractor will provide necessary facilities, measures, and personnel to:

- Direct and control the work, including the use of proper methods of work, thorough inspection of finished work, and cost control;
- Provide a job trailer office for Site personnel, if needed.
- Arrange for telephone service and facsimile service at the location of their job trailer, if needed. Cell phones may be used in lieu of hardwired phones lines;
- Provide temporary toilet, and any necessary shower facilities, to support ACM abatement activities, and dispose of generated waste items;
- Potable Water System – The Contractor will assume for their cost estimate that a temporary connection for potable water is available at the Site for use as dust suppression, showers, or for fire watch. If applicable, the Contractor is responsible for obtaining the water meter from the appropriate authorities and paying all fees. The Contractor will provide an alternate price in the event that a temporary water connection is not available. The Contractor will be required to provide and maintain a tanker with pump system or equivalent if potable water is not available.
- Provide temporary electrical services;
- Provide fire protection and firefighting equipment such as fire hose, blankets, fire extinguishers, water, etc. in connection with performance of the work; and,
- Maintain the work area in a safe, secure, clean and orderly condition, consistent with the work being performed at all times. The individual Site work and building areas will be vacated of equipment upon dismantling completion, and will be left in a clean, neat manner acceptable to the Group.

The Contractor will clean up and dispose of any spillage of materials that may occur during any part of the Work, at the Contractor's expense, whether or not the waste materials were previously identified by SCCC. As a precaution, spill response materials, including absorbent pads and absorbent materials, will be stored on-Site and will be maintained such that they are ready for use. The Contractor will immediately notify the Group Representative of the nature and extent of any spill.

9.2 DEMOLITION

9.2.1 Floors, Foundations Walls, and Pads

Walls and pedestals will be brought to a grade level with the existing floor elevation with the intent to have a debris-free and walkable surface. At a minimum, the foundation and building pads will be swept clean. The sweepings will be collected and disposed with other C&D waste materials. Building pads that are level with or above a majority of the surrounding grade will remain intact. Building pads will remain in-place at this time as an engineering control for the Site soils.

All anchor bolts, piping, poles, connecting rods, and/or re-bar will be removed to match the surrounding elevation prior to completion of work.

9.2.2 Pipe and Conduit Supports

Elevated concrete structures, reinforcement bars, and structural steel will be removed to match the grade of surrounding building floor elevations.

9.2.3 Equipment Bases and Pedestals

Former equipment base foundations will be left in place if the existing top elevation is below the expected final elevation of the surrounding building pad, or bases will be removed to an elevation that is consistent with the existing building floor elevation if the base pads are higher than surrounding grade. Anchor bolts and reinforcing rebar will be cut off flush with the top/sides of the pad. Building 16 contains equipment bases or pedestals that exhibit staining. The stained equipment bases will be removed to grade and materials disposed off-Site.

Any pedestals will be left in place if the existing top elevation is below the expected final elevation of the surrounding building pad. Alternately, the pedestals will be removed down to an elevation that will be consistent with, or lower than, the final expected building pad elevation (i.e., if the pedestals are higher than the surrounding grade). Anchor bolts and reinforcing rebar will be cut off to be flush with the surrounding elevation. Gravel may be used to fill in any slip trip or fall hazards.

9.2.4 Below Grade Piping

Under no circumstances will the Contractor remove any below grade fixtures including, but not limited to, trenches, piping, manholes, sumps, clean outs, or conduit without prior written approval from the Oversight Contractor. All piping leading below grade will be sheared or cut to grade and the below grade portion left in place. The Contractor will fill the ends of the open piping/conduits with flowable fill to the extent practicable, and pipe end will be filled to match the surrounding surface with flowable fill, 6-inches of concrete, or capped in a manner acceptable to the Group or the Group's Oversight Contractor.

9.2.5 Structural Steel

The Contractor will remove or dismantle structural steel components using appropriate methods that allow for the recycling and transportation of the steel. Systematic shearing, sawing, or hot work may be used when the steel is to be scrapped.

9.2.6 Conveyor Structure

The Contractor will remove or dismantle all components associated with the open conveyor structure that runs between Buildings 15, 16 and 17 using appropriate methods. Contractor will protect, to the extent practicable, building structures not scheduled for demolition under this scope of work (e.g., Buildings 15 and 17).

10.0 WASTE MANAGEMENT

This section outlines the requirements and disposition of materials to be generated as part of the ACM Removal and Demolition Project. The Contractor will be responsible for profiling, loading, handling, transportation and disposal of waste.

The Contractor will be responsible for shipping requirements, weight determinations, compliance with Department of Transportation and State requirements, and will arrange for shipment to the final destination. Non-waste materials leaving the Site will be documented by either a 1) certificate of destruction/recycling (COD) from the scrap recycler, or 2) Bill of sale agreement transferring ownership from SCCC to the Contractor. Bills of lading and/or waste manifests will be prepared for C&D waste shipments leaving the Site. The Contractor will weigh loads of scrap, waste, or recyclable materials at a nearby certified scale. The Contractor will identify the location of the scale in his Project Plan.

10.1 SCRAP METAL

The Contractor will prepare and size all scrap metal (steel, wire, etc.) for acceptance by an approved scrap metal recycler. At the close of the project the Contractor will provide the Group with a daily log documenting each shipment of metal and its weight and final destination.

10.2 C&D MATERIALS MANAGEMENT

During the demolition, any C&D materials generated during demolition activities will be segregated, as appropriate, and stored in accordance with all applicable requirements. The Contractor will provide a supply of storage container(s) for collection/segregation of the materials during the project as needed for disposal.

Any wastes will be profiled with the Contractor proposed and SCCC-approved disposal facility. The profile requests will be prepared and submitted to the disposal facility for review and approval. While previous waste classification requests identified for other building materials on-Site were non-hazardous, it is the Group's intention to complete additional characterization and obtain Waste Determination letters from the NJDEP with respect to C&D materials prior to demolition of the existing buildings and structures. Analytical results from material characterization are provided in Table 4 and will serve as the basis for the Contractor's estimate. Results of sampling presented in Table 4 indicated the materials are characteristically non-hazardous.

10.3 HAZARDOUS WASTE MANAGEMENT

While no hazardous waste disposal is expected as part of this Demolition Project, hazardous wastes would need to be profiled to ensure that all applicable requirements are complied with during the course of the Project. SCCC will be responsible for verifying the correct profile of the waste. Any hazardous waste will be shipped off-site to a facility permitted to accept the waste,

and transported using hazardous waste manifests. Certificates of Disposal documenting the final disposition of the waste will be provided by, and obtained from the facility.

10.4 ASBESTOS CONTAINING MATERIALS

ACM removed per the removal plans, and classified as "ID 27A" (non-hazardous asbestos) waste will be bagged or otherwise packaged wet in sealed containers, labeled with generator identification as required, and placed in designated asbestos waste containers provided by the approved asbestos waste hauler or Contractor. The Contractor is responsible for all loading, handling, transportation and disposal of asbestos containing waste.

ACM that is to be wetted and double bagged for disposal shall be marked with an approved label such as the following:

DANGER
CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
CANCER AND LUNG DISEASE HAZARD

10.5 MISCELLANEOUS NON-HAZARDOUS WASTE MANAGEMENT

Other waste materials, such as Universal Waste, as defined in 40CFR 273, will be collected and placed in appropriate containers, properly labeled, and disposed or recycled at a Group-approved location. The Contractor will be responsible for proper containerization, labeling, loading, transportation, and disposal of such materials.

TABLES

TABLE 1
PERTINENT BUILDING INFORMATION
WORK PLAN FOR
BUILDINGS 16, 19 AND 20 DEMOLITION AND ASBESTOS REMOVAL
STANDARD CHLORINE CHEMICAL CO., INC. SITE
KEARNY, NEW JERSEY

Building Number	Historical Use Description	Approximate Square Footage	Description	Material Contents				
				Concrete/Brick/ Masonry	ACM/Roof	Wood	Glass/Debris	PCB in Caulk
16	Chipper Building	650	2-story, Wood and steel structural members, siding is transite and metal	Yes	Yes	Yes	Yes	No
19	Flaking Building	4,000	1.5 story, cement block building with built up roofs containing ACM	Yes	Yes	Yes	Yes	No
20	Flaking Building	4,000	1.5 story, cement block building with built up roofs containing ACM	Yes	Yes	Yes	Yes	No

TABLE 2
LIST OF ACM QUANTITIES
WORK PLAN FOR
BUILDINGS 16, 19 AND 20 DEMOLITION AND ASBESTOS REMOVAL
STANDARD CHLORINE CHEMICAL CO., INC. SITE
KEARNY, NEW JERSEY

Building #16

Location(s)	Description of ACM	Estimated Quantity	Abatement Procedure(s)(1)
Exterior siding	Transite panels (gray)	3,500 sq. ft.	C.) Manual Removal
Exterior	Window caulking/glaze	4 masonry windows ~7 x7	C.) Manual Removal

Building #19

Location(s)	Description of ACM	Estimated Quantity	Abatement Procedure(s)(1)
Exterior	Window glaze	12 masonry windows ~5' x4'	C.) Manual Removal
Exterior debris	Transite debris	80 sq. ft.	C.) Manual Removal
Exterior roof	Roof field	3,900 sq. ft.	D.) Roof Removal
Exterior door	Fire door	100 sq. ft.	C.) Manual Removal

Building #20

Location(s)	Description of ACM	Estimated Quantity	Abatement Procedure(s)(1)
Exterior	Window glaze	12 masonry windows ~5' x4'	C.) Manual Removal
Fire door	Door insulation	100 sq. ft.	C.) Manual Removal
Collapsed exterior roofing	Roof & flashing	3,900 sq. ft.	C/D.) Manual Removal/ Roof Removal

Notes:

1. If any of the buildings are structurally unsafe or condemned, all friable and non-friable will be removed manually on the ground separating (ACM from other non-contaminated demolition debris.

TABLE 3
PCB ANALYTICAL DATA FOR WINDOW CAULK SAMPLES
WORK PLAN FOR
BUILDINGS 16, 19 AND 20 DEMOLITION AND ASBESTOS REMOVAL
STANDARD CHLORINE CHEMICAL CO., INC. SITE
KEARNY, NEW JERSEY

SAMPLE NUMBER LOCATION SUBSTRATE TESTED	PARAMETER DETECTED	CONCENTRATION REPORTED (MG/KG)	EPA CRITERION MG/KG
Sample #P1 B-16, Bldg#16 Window Caulking Glazing	All Aroclors<0.95		50
Sample #P5 B-19, Bldg#16 Window Caulking Glazing	All Aroclors<0.67		50
Sample #P7 B-20, Bldg#20 Window Caulking Glazing	All Aroclors<0.76		50

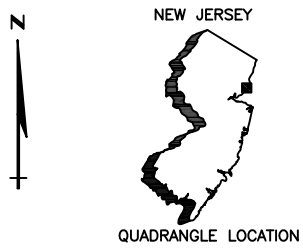
TABLE 4
BUILDING MATERIAL CHARACTERIZATION DATA
WORK PLAN FOR
BUILDINGS 16, 19 AND 20 DEMOLITION AND ASBESTOS REMOVAL
STANDARD CHLORINE CHEMICAL CO., INC. SITE
KEARNY, NEW JERSEY

		Material Type	ACM/ Roofing Materials			Concrete/Brick/Masonry					Wood	Glass/Debris
		Building Number	16	19	20	16	19	19	20	20	16, 19, 20	16, ,19, 20
		Sample ID	A-16	A-19	A-20	M-16	M-19A	M-19B	M-20A	M-20B	W-1	G-1
		Sample Date	3/1/2010	3/2/2010	3/2/2010	2/25/2010	2/25/2010	2/25/2010	2/25/2010	2/25/2010	3/1/2010	3/1/2010
		Sample Type	Composite	Composite	Composite	Composite	Composite	Composite	Composite	Composite	Composite	Composite
PARAMETER	**UNITS**	**RCRA LIMITS**[1]										
RCRA CHARACTERISTICS												
Flashpoint/Ignitability	Degrees F	<140	No	No	No	No	No	No	No	No	No	No
pH	S.U.	<=2 or >=12.5	8.2	6.9	7.2	11	8.4	9	8.6	9	3.9	8.3
Total Sulfide	mg/kg	500	12.9 U	15.8 B	76.5 B	14.1 U	12.8 U	12.8 U	13.4 U	12.8 U	16.4 U	12.3 U
Total Cyanide	mg/kg	250	0.11 U	0.75 J	1.4 J	0.12 U	0.11 U	0.11 U	0.12 U	0.11 U	1.0 J	0.11 U
TCLP VOCs												
1,1-Dichloroethylene	mg/l	0.7	0.043 U	0.043 U	0.043 U	0.043 U	0.043 U	0.043 U	0.043 U	0.043 U	0.043 U	0.043 U
1,2-Dichloroethane	mg/l	0.5	0.038 U	0.038 U	0.038 U	0.038 U	0.038 U	0.038 U	0.038 U	0.038 U	0.038 U	0.038 U
2-Butanone	mg/l	200	0.043 U	0.043 U	0.043 U	0.043 U	0.043 U	0.043 U	0.043 U	0.043 U	0.043 U	0.043 U
Benzene	mg/l	0.5	0.040 U	0.040 U	0.040 U	0.040 U	0.040 U	0.040 U	0.040 U	0.040 U	0.040 U	0.040 U
Carbon Tetrachloride	mg/l	0.5	0.043 U	0.043 U	0.043 U	0.043 U	0.043 U	0.043 U	0.043 U	0.043 U	0.043 U	0.043 U
Chlorobenzene	mg/l	100	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U
Chloroform	mg/l	6	0.040 U	0.040 U	0.040 U	0.040 U	0.040 U	0.040 U	0.040 U	0.040 U	0.040 U	0.040 U
Tetrachloroethylene	mg/l	0.7	0.033 U	0.033 U	0.033 U	0.033 U	0.033 U	0.033 U	0.033 U	0.033 U	0.033 U	0.033 U
Trichloroethylene	mg/l	0.5	0.032 U	0.032 U	0.032 U	0.032 U	0.032 U	0.032 U	0.032 U	0.032 U	0.032 U	0.032 U
Vinyl chloride	mg/l	0.2	0.052 U	0.052 U	0.052 U	0.052 U	0.052 U	0.052 U	0.052 U	0.052 U	0.052 U	0.052 U
TCLP SVOCs												
1,4-Dichlorobenzene	mg/l	7.5	0.0012 U	0.0012 U	0.0012 U	0.0012 U	0.0012 U	0.0012 U	0.0012 U	0.0012 U	0.0012 U	0.0012 U
2,4,5-Trichlorophenol	mg/l	400	0.0013 U	0.0013 U	0.0013 U	0.0013 U	0.0013 U	0.0013 U	0.0013 U	0.0013 U	0.0013 U	0.0013 U
2,4,6-Trichlorophenol	mg/l	2.0	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0011 U
2,4-Dinitrotoluene	mg/l	0.13	0.0010 U	0.0010 U	0.0010 U	0.0010 U	0.0010 U	0.0010 U	0.0010 U	0.0010 U	0.0010 U	0.0010 U
Cresols	mg/l	200	0.0040 U	0.0040 U	0.0040 U	0.0040 U	0.0040 U	0.0040 U	0.010 J	0.0040 U	0.0040 U	0.0040 U
Hexachlorobenzene	mg/l	0.13	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0011 U
Hexachlorobutadiene	mg/l	0.5	0.0013 U	0.0013 U	0.0013 U	0.0013 U	0.0013 U	0.0013 U	0.0013 U	0.0013 U	0.0013 U	0.0013 U
Hexachloroethane	mg/l	3	0.0013 U	0.0013 U	0.0013 U	0.0013 U	0.0013 U	0.0013 U	0.0013 U	0.0013 U	0.0013 U	0.0013 U
Nitrobenzene	mg/l	2	0.0013 U	0.0013 U	0.0013 U	0.0013 U	0.0013 U	0.0013 U	0.0013 U	0.0013 U	0.0013 U	0.0013 U
Pentachlorophenol	mg/l	100	0.0022 U	0.0022 U	0.0022 U	0.0022 U	0.0022 U	0.0022 U	0.0022 U	0.0022 U	0.0022 U	0.0022 U
Pyridine	mg/l	5	0.00083 U	0.00083 U	0.00083 U	0.00083 U	0.00083 U	0.00083 U	0.00083 U	0.00083 U	0.00083 U	0.00083 U
TCLP Metals												
Arsenic	mg/l	5	0.0047 B	0.0023 B	0.0022 U	0.0022 U	0.0022 U	0.0022 U	0.0022 U	0.0022 U	0.0022 U	0.0022 U
Barium	mg/l	100	0.22	0.14 B	0.14 B	0.11 B	0.043 B	0.057 B	0.050 B	0.048 B	0.045 B	0.011 B
Cadmium	mg/l	1	0.0032 B	0.0014 B	0.0018 B	0.00024 U	0.00024 U	0.00029 B	0.00024 U	0.00024 U	0.011 B	0.00045 B
Chromium	mg/l	5	0.055	0.025 B	0.010 B	0.0023 B	0.0032 B	0.0018 B	0.0019 B	0.0017 B	2.6	0.048 B
Lead	mg/l	5	0.0014 U	0.045 B	0.013 B	0.0014 U	0.0014 U	0.0014 U	0.0014 U	0.0014 U	0.018 B	0.025 B
Mercury	mg/l	0.2	0.000038 U	0.000038 U	0.000038 U	0.000074 B	0.000056 B	0.000039 B	0.000038 U	0.000038 U	0.000038 U	0.000064 B
Selenium	mg/l	1	0.010 B	0.0083 B	0.0074 B	0.0079 B	0.011 B	0.0098 B	0.0081 B	0.011 B	0.0080 B	0.0068 B
Silver	mg/l	5	0.00058 U	0.00058 U	0.00058 U	0.00058 U	0.00058 U	0.00058 U	0.00058 U	0.00058 U	0.0029 B	0.00058 U
TCLP Pesticides												
Chlordane	mg/l	0.03	0.00066 U	0.00066 U	0.00066 U	0.00066 U	0.00066 U	0.00066 U	0.00066 U	0.00066 U	0.00066 U	0.00066 U
Endrin	mg/l	0.02	0.00039 U	0.00039 U	0.00039 U	0.00039 U	0.00039 U	0.00039 U	0.00039 U	0.00039 U	0.00039 U	0.00039 U
Heptachlor	mg/l	0.008	0.00040 U	0.00040 U	0.00040 U	0.00040 U	0.00040 U	0.00040 U	0.00040 U	0.00040 U	0.00040 U	0.00040 U
Heptachlor epoxide	mg/l	0.008	0.00039 U	0.00039 U	0.00039 U	0.00039 U	0.00039 U	0.00039 U	0.00039 U	0.00039 U	0.00039 U	0.00039 U
Lindane	mg/l	0.4	0.00032 U	0.00032 U	0.00032 U	0.00032 U	0.00032 U	0.00032 U	0.00032 U	0.00032 U	0.00032 U	0.00032 U
Methoxychlor	mg/l	10	0.00037 U	0.00037 U	0.00037 U	0.00037 U	0.00037 U	0.00037 U	0.00037 U	0.00037 U	0.00037 U	0.00037 U
Toxaphene	mg/l	0.7	0.0074 U	0.0074 U	0.0074 U	0.0074 U	0.0074 U	0.0074 U	0.0074 U	0.0074 U	0.0074 U	0.0074 U
TCLP Herbicides												
2,4-D	mg/l	10	0.0045 U	0.0045 U	0.0045 U	0.0045 U	0.0045 U	0.0045 U	0.0045 U	0.0045 U	0.0045 U	0.0045 U
Silvex	mg/l	1	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0011 U
Total PCBs												
Aroclor 1016	ug/kg	50,000	47	94 J	65 U	2.9 U	2.6 U	2.6 U	2.7 U	2.6 U	3.3 U	2.5 U
Aroclor 1221	ug/kg	50,000	3.3 U	33 U	83 U	3.7 U	3.3 U	3.3 U	3.5 U	3.3 U	4.2 U	3.2 U
Aroclor 1232	ug/kg	50,000	3.0 U	30 U	75 U	3.3 U	3.0 U	2.9 U	3.1 U	3.0 U	3.8 U	2.8 U
Aroclor 1242	ug/kg	50,000	2.8 U	28 U	71 U	3.1 U	2.8 U	2.8 U	3.0 U	2.8 U	3.6 U	2.7 U
Aroclor 1248	ug/kg	50,000	1.7 U	16 U	41 U	1.8 U	1.6 U	1.6 U	1.7 U	1.6 U	2.1 U	1.6 U
Aroclor 1254	ug/kg	50,000	60	25 U	62 U	2.7 U	2.5 U	2.4 U	2.6 U	2.5 U	3.2 U	2.4 U
Aroclor 1260	ug/kg	50,000	2.5 U	130 J	110 J	2.7 U	2.5 U	2.4 U	2.6 U	2.5 U	22	2.4 U
Aroclor 1262	ug/kg	50,000	3.8 U	38 U	96 U	4.2 U	3.8 U	3.8 U	4.0 U	3.8 U	4.9 U	3.6 U
Aroclor 1268	ug/kg	50,000	2.2 U	22 U	56 U	2.5 U	2.2 U	2.2 U	2.3 U	2.2 U	2.9 U	2.1 U

Notes:
[1]: Waste Classification Request Form [HWM-009 (6/22/09)] Appendix 4
PCB standard from TSCA 40 CFR 761.
S.U. - Standard units
ug/kg - micrograms per kilogram
mg/kg - milligrams per kilogram
mg/l - milligrans per liter

U - constituent not detected at reported concentration
J - estimated result, for organics
J - method blank contamination, for inorganics
B - estimated result, for inorganics

FIGURES



REFERENCE: USGS 7.5 MINUTE TOPOGRAPHIC QUADRANGLES OF JERSEY CITY, AND WEEHAWKEN, NEW JERSEY

ISSUE DATE:

KEY ENVIRONMENTAL, INC.
200 THIRD AVENUE
CARNEGIE, PA 15106

PENINSULA RESTORATION GROUP

DRWN: GLC	DATE: 08/24/09
CHKD: RJH	DATE: 08/24/09
APPD: JSZ	DATE: 08/24/09
SCALE:	1"= 2000'

KEY ENVIRONMENTAL INCORPORATED

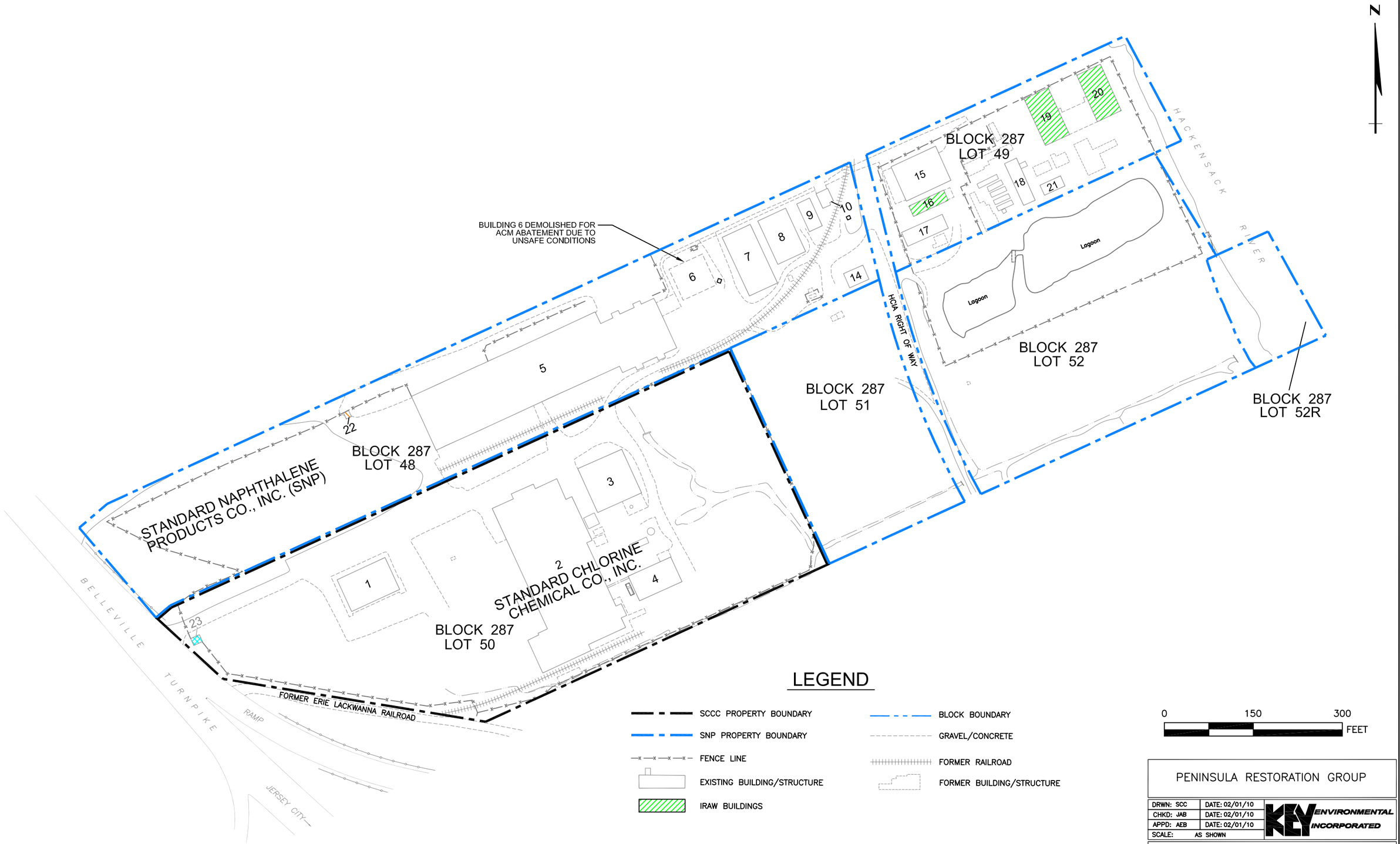
BUILDINGS 16,19, AND 20 DEMOLITION AND ACM REMOVAL
SCCC SITE
KEARNY, NEW JERSEY

SITE LOCATION MAP

PROJECT NO: 09-803/804
FIGURE 1

200905

y:\00civil\kearny\ira design\production drawings\building demolition scoping\buildings 16, 19 and 20\figure 1 - usgs map.dwg Last Saved By: Scomer 1/28/2010 5:13 PM Plotted By: Shelly Comer 1/28/2010 5:15 PM Scale: 1:1



LEGEND

- SCCC PROPERTY BOUNDARY
- SNP PROPERTY BOUNDARY
- FENCE LINE
- EXISTING BUILDING/STRUCTURE
- IRAW BUILDINGS
- BLOCK BOUNDARY
- GRAVEL/CONCRETE
- FORMER RAILROAD
- FORMER BUILDING/STRUCTURE

0 150 300 FEET

PENINSULA RESTORATION GROUP

DRWN: SCC	DATE: 02/01/10	KEY ENVIRONMENTAL INCORPORATED	
CHKD: JAB	DATE: 02/01/10		
APPD: AEB	DATE: 02/01/10		
SCALE: AS SHOWN			

BUILDINGS 16,19, AND 20 DEMOLITION AND ACM REMOVAL
SCCC SITE
KEARNY, NEW JERSEY

SITE LAYOUT AND BUILDING IDENTIFICATION

PROJECT NO: 09-803/804

FIGURE 2

REV #	DATE	DESCRIPTION	APPD
3			
2			
1			

REFERENCE:

1. EXISTING GROUND SURFACE CONTOURS PER AIR SURVEY, DULLES, VIRGINIA, APRIL 14, 2001. HORIZONTAL REFERENCE: NEW JERSEY STATE PLANE COORDINATES (NAD 1927). VERTICAL REFERENCE:NATIONAL GEODETIC VERTICAL DATUM (NGVD 1929).
2. PROPERTY BOUNDARY SHOWN HEREON FROM SHEET 1 OF 1 TITLED "SURVEY OF PROPERTY, TAX LOTS 48, 49, 50, 51, 52 AND 52R, BLOCK 287, TOWN OF KEARNY, HUDSON COUNTY, NEW JERSEY," DATED JULY 1, 2009 (REVISION 2: JULY 29, 2009), PREPARED BY DYKSTRA ASSOCIATES, PC.

ISSUE DATE:

KEY ENVIRONMENTAL, INC.
200 THIRD AVENUE
CARNEGIE, PA 15106

200906

APPENDIX A

ASBESTOS REMOVAL PLAN

OMEGA
ENVIRONMENTAL
SERVICES, INC.

ASBESTOS ABATEMENT WORK PLAN

SITE: Standard Chlorine Chemical Co.
1015-1035 Belleville Turnpike
Kearny, New Jersey 07032

PREPARED FOR: Key Environmental, Inc.
185 Lancaster Street, Suite 304
Lancaster, ME 04103
Jacob Bourdeau, P.E., Project Manager

BUILDING(S): #16, #19, & #20

OMEGA CONTACT: Geiser Fajardo
(Asbestos Inspector)

DATE WORK PLAN ISSUED: 02/03/2010

PROJECT START DATE: To be determined

COMPLETION DATE: To be determined

PLAN APPROVED BY:
Veronica Kero, CIH, P.E.
(Asbestos Project Designer – 91-00474)

TABLE OF CONTENTS

ASBESTOS ABATEMENT WORK PLAN

PART 1 GENERAL

1.01 DESCRIPTION OF WORK

A. This asbestos abatement specification, also referred to as Asbestos Abatement Work Plan, covers the proper and legal removal and disposal of all asbestos-containing materials (ACM) from vacant Buildings #16, #19, and #20 on a property known as Standard Chlorine Chemical Company, located at 1015-1035 Belleville Turnpike, Kearny, New Jersey 07032.

This work plan covers the removal of identified ACM from the building structures which are slated for dismantling/demolition.

B. The abatement activities shall comply with all aspects of the Contract Documents and Federal, State and local requirements. Whenever there is a conflict or overlap within these specifications and/or between applicable codes and regulations, the most stringent provision shall apply.

C. Regulatory compliance shall include but is not necessarily limited to applicable requirements set forth by the United States Environmental Protection Agency (USAEPA); New Jersey Department of Labor (NJ-DOL), New Jersey Department of Health (NJ-DOH), New Jersey Department of Environmental Protection (NJ-DEP), and the Local Building and Health Departments.

D. The Contractor shall pay for final clearance air samples which fail to meet the re-occupancy clearance standard. Should a delay occur, due to failure(s) of clearance air testing, all associated expenses such as air sampling labor time, and sample analysis costs incurred by the owner (including engineering and laboratory fees) will be the responsibility of and paid by the Contractor. All abatement work activities, including demobilization, must be completed within the time frame to be determined by the Owner or as specified in the proposal.

E. Inspection findings of ACM and quantities to be removed from the referenced property are provided and summarized in Section 1.03.

F. The Contractor is responsible to remove and properly dispose or scrap all roof top HVAC and associated equipment required in order to complete the asbestos abatement.

G. Contractor is responsible for their own independent verification of asbestos quantities and field conditions, and no change orders will be approved for any pre-existing site conditions if the contractor fails to verify any such conditions before initiating his/her work. The contractor shall be allowed to review the Work Plan(s) and verify quantities of ACM and schedule for its removal. This shall be performed no later than at least 1 week prior to start of the removal work.

1.02 PROJECT IDENTIFICATION AND DESCRIPTION

A. Project Location(s) — Buildings # 16, 19 & 20
Standard Chlorine Chemical Co.
1015-1035 Belleville Turnpike
Kearny, New Jersey 07032

B. Owner Representative/Engineer
Key Environmental, Inc.
456 Route 22 West, Suite D
Whitehouse Station, NJ 08889
Jacob Bourdeau, P.E., Project Manager
Phone: 207-772-8100

C. Project Designer/Monitor
Omega Environmental Services, Inc.
280 Huyler Street
South Hackensack, NJ 07606
Contact: Geiser Fajardo
Phone: 201-480-8700 Fax: 201-342-5412

1.03 SCOPE OF WORK

A. Work includes filing and permitting all necessary applications, notifications, and fees; providing insurance; necessary design services; providing skilled, licensed and certified labor; providing materials; and equipment necessary for proper preparation, handling, removal and legal disposal of all identified asbestos-containing materials and ACM contaminated waste from the building included in the scope of work and in accordance with all requirements of applicable Federal, State and local regulations.

B. The estimated quantities of ACM to be removed from the subject buildings are listed in a Table below.

BUILDING # 16

Location(s)	Description of ACM	Estimated Quantity	Abatement Procedure(s)
Exterior siding	Transite panels (gray)	3,500 sq. ft.	See Section 3.08-B
Exterior	Window caulking/glazing	4 masonry window openings, ~7'x7'	See Section 3.08-B

BUILDING # 19

Location(s)	Description of ACM	Estimated Quantity	Abatement Procedure(s)
Exterior	Window glazing	12 masonry window openings, ~5'x4'	See Section 3.08-B
Exterior debris	Transite debris	80 sq. ft.	See Section 3.08-B
Exterior roof	Roof field/flashing/mastic	3,900 sq. ft.	See Section 3.08-C
Exterior door	Fire door	100 sq. ft.	See Section 3.08-B

BUILDING # 20

Location(s)	Description of ACM	Estimated Quantity	Abatement Procedure(s)
Exterior	Window glazing	12 masonry window openings, ~5x4'	See Section 3.08-B
Collapsed exterior roofing	Roof & flashing	3,900 sq. ft.	See Section 3.08-C
Fire door	Door insulation	100 sq. ft.	See Section 3.08-B

General Notes:

1. The Asbestos Abatement Contractor bidding on this project shall be responsible for verifying locations and quantities of all ACM, and shall bid on this work using lump sum pricing.
2. Buildings # 19 and #20 are dilapidated and part of the roofs are structurally unsafe. The decision to condemn the building will be determined by a Professional Engineer. Therefore, removal of ACM from the building's roof by hand would not be feasible.
3. As part of these quantity estimates, any glazing or ACM debris on floors shall be included for removal in these quantities.
4. Use of proposed alternative methods, if any, (i.e., not full containment or glove bag/tent) must be submitted in writing and approved by the Owner or Owner's representative.

C. All work identified for the subject buildings shall be completed during a single phase without multiple mobilizations. Any changes to this assumption will be addressed during the mandatory Contractor walkthrough and/or as approved by the Owner or Owner's representative.

D. The Contractor shall be aware of all conditions of the Project and is responsible for verifying quantities and locations of all Work to be performed. Failure to do so shall not relieve the Contractor of his/her obligation to furnish all labor and materials necessary to perform the work. Any discrepancies noted shall be brought to the Owner's attention prior to bidding the project. No claims for extras shall be made by the Contractor for the work described in this Work Plan. Request for extras shall be made in writing for approval and only for work not covered under this plan.

E. Any materials which were not identified in the above tables shall be treated as if they are ACM until they are properly tested and verified to be non-ACM by a qualified asbestos inspector/laboratory.

F. The Contractor shall be responsible for filing all notifications, permits and variances with Federal, State and local agencies having jurisdiction over this project. Failure on behalf of the Contractor for submitting notification shall not result in any extension for the timely completion of the work set forth in the Contract. The Contractor shall be responsible and will be required to pay any administrative penalties imposed on the Owner for actions taken or lack thereof by the Contractor.

A copy of the Kearny Building Department permit shall be forwarded to the Owner/Owner's representative prior to the start of work.

G. Work includes necessary selective demolition and protective measures required to access and remove ACM and maintain a safe working environment.

H. Work may include the cleaning of equipment and furnishings that exist within the subject building and that may be contaminated by asbestos, movable and permanent. Equipment and furnishings that cannot be decontaminated shall be removed as ACM.

I. Upon completion of asbestos removal, the Contractor shall provide a notarized statement stating all identified ACM have been properly removed in accordance with applicable rules and regulations.

J. If electrical/water sources are unavailable, it will be the Contractor's responsibility to provide all temporary connections and hook-ups as well as obtaining permits and paying all fees for making such services available for this work as is necessary. If necessary, the Contractor shall provide temporary services as specified herein, and as required or as necessary to carry out the work. This may include such items as portable generators, water tank trucks, pumps, and necessary accessories, or the means and equipment and services necessary to temporarily connect to and maintain such services from adjacent utility systems.

K. The Contractor shall assume full responsibility and liability for compliance with all applicable Federal, State, and local laws, rules, and regulations pertaining to Work practices, protection of Workers, authorized visitors to the site, persons and property adjacent to the Work. The Contractor is responsible for all fines, penalties, notices of violations suits or claims related to permitting, notifications, asbestos abatement and disposal of ACM addressed to the contractor and the Owner or Engineer and will address any proceedings related to these suits, claims or violations on behalf of theses parties and incur any legal fees, court fees or final judgments against the Contractor, Owner or Engineer relating to these proceedings.

L. It is the sole responsibility of the Contractor to determine what, if any patents are applicable to the Project. The Contractor will pay all royalties and/or license fees, and will defend all suits or claims for infringement of any patent rights and hold others harmless from loss, including attorney's fees.

M. The abatement contractor shall hold and document daily pre-abatement safety "tool box" meetings to review safe work practices and emergency communication program for the project.

The abatement contractor's supervisor and the consultant's project monitor must also ensure that proper fire extinguishing equipment is present. The supervisor shall be knowledgeable in the proper use of fire extinguishing equipment, and emergency exit plans.

N. The abatement contractors supervisors and handlers must document proper training under Asbestos Control & License Act N.J.S.A.34:5A-32, and 29CFR 1910.120(e), including but not limited to 40 Hour Health & Safety for Hazardous Waste Hazwoper Personnel, annual 8 hour OSHA refreshers, and 8 or 16-hour Confined Space Entry (as needed).

1.04 RELATED SECTIONS AND DOCUMENTS

No original design drawings are available. The Contractor shall satisfy itself to all possible construction of the building that may have been used at the time of original construction. No claims for unknown or unusual construction shall be considered.

1.05 COORDINATION WITH DEMOLITION WORK

As per USEPA NESHAP and other requirements, all ACM shall be removed from the structure/building prior to the onset of demolition work, unless the building/structure has been deemed unsafe and was condemned by a State of New Jersey licensed Professional Engineer (PE). In order for a building/structure to be condemned, the PE shall perform an inspection of the structure/building. If the structure/building has been officially condemned (in writing) it would enable the Owner to obtain demolition permit for the specific building/structure before asbestos abatement has been completed. Once the building is demolished with implementation of dust control and other engineering controls described herein, the ACM can then be segregated and removed at ground level from the demolition pile. Wet methods shall be utilized throughout the demolition and segregation process in order to comply with the EPA NESHAP regulations of no visible emissions.

1.06 STANDARD OPERATING PROCEDURES

A. The Contractor's standard operating procedure shall include the following:

1. Security arrangements to control unauthorized entry into the workplace.
2. Proper PPE prior to entering the work area(s) from the outside.
3. Safe work practices in the work place, including provisions for inter-room communications, exclusion of eating, drinking, and smoking, or in any way jeopardizing the respirator protection.
4. Proper exit procedures from the work areas to the outside utilizing decon.
5. Removal of ACM using wet methods in compliance with NESHAP.
6. Packing, labeling, loading, transporting, and disposing of ACM in a manner that minimizes exposure and potential contamination.
7. Emergency evacuation for medical or safety so that exposure will be minimized.
8. Safety precautions to prevent accidents in the work space, including but not limited to, electrical shocks and trip and fall hazards associated with scaffolding, slippery surfaces, and entanglements in loose hoses and equipment.
9. Provisions for effective supervision, air monitoring, and personnel monitoring for exposure during the work operation.

B. Provide an Asbestos Supervisor to remain on-site for the duration of the project and to be responsible for the following:

1. Ensure workers/visitors have access to sufficient and proper PPE & are trained in its use.
2. Maintain entry log records and ensure that they are recorded in accordance with the provisions of 29CFR 1926.1101.
3. Surveillance of the work areas at least once per shift to ensure proper PPE is worn by the workers and is not damaged. If damaged PPE is observed, corrective actions shall be implemented.
4. Take precautions to prevent injuries that may occur as a result of heat stress, overexertion and other biological factors, such as ticks, etc.
5. Periodic (at least twice per shift) examination of enclosure barriers, barricades, decons, etc.

1.07 EMERGENCY PRECAUTIONS

A. Establish emergency and fire exits from the work area.
B. Local medical emergency personnel (hospital and ambulance) contact information must be identified by the Contractor prior to the onset of abatement work and must be posted in a prominent location.
C. The Contractor shall be prepared to administer first aid to injured personnel after decontamination. Seriously injured personnel shall be treated immediately or evacuated without delay for decontamination. When an injury occurs, precautions shall be taken to reduce airborne fiber concentrations until the injured person has been removed from the work area.
D. The Contractor shall ensure that no exits from the building are obstructed, that appropriate safety barriers are established to prevent access, and that work areas are kept neat, clean, and safe.

1.08 DEFINITIONS

The following general definitions are for terms that may be utilized or implied within this specification.

Abatement - Proper removal of asbestos by State of New Jersey licensed/accredited asbestos abatement contractor utilizing licensed asbestos supervisors and workers in accordance with applicable Federal, State and local requirements.

Adequately wetted - "Adequately wetted" means sufficiently mixed or coated with water, amended water or an aqueous solution; or the use of a removal encapsulant to prevent dust emissions.

Air Exhaust (negative pressure) System - A portable, powered, local exhaust system equipped with HEPA filtration, capable of maintaining constant low velocity air flow into the contaminated work area from adjacent, uncontaminated areas and capable of maintaining negative static air pressure under maximum filter load with respect to adjacent, uncontaminated areas.

Air Sampling - The process of measuring the fiber content of a known volume of air collected during a specific period of time.

Ambient air monitoring - "Ambient air monitoring" shall mean measurement or determination of airborne asbestos fiber concentrations outside but in the general vicinity of the work site.

Amended water - "Amended water," means water to which a chemical wetting agent or removal encapsulant has been added to improve penetration.

Area air sampling - "Area air sampling" shall mean any form of air sampling or monitoring where the sampling device is placed at some stationary location.

Asbestos - "Asbestos" means the varieties of asbestos, including actinolite, amosite, anthophyllite, chrysotile, crocidolite and tremolite.

Asbestos Abatement - "Asbestos abatement" means the removal, encapsulation, enclosure, renovation, repair, demolition or other disturbance of asbestos-containing materials.

Asbestos Abatement Project - "Asbestos abatement project" means any asbestos abatement performed within a facility involving more than three (3) linear feet or three (3) square feet of asbestos-containing material.

Asbestos Abatement Worker - "Asbestos abatement worker" means any employee of an asbestos contractor who engages in asbestos abatement.

Asbestos Abatement Site Supervisor - "Asbestos Abatement Site Supervisor" means any individual who is employed or engaged by an asbestos contractor to supervise an asbestos abatement project.

ACM - "Asbestos-containing material" means material composed of asbestos of any type and in an amount greater than 1 percent by weight, either alone or mixed with other fibrous or non-fibrous material.

Asbestos-containing waste - "Asbestos-containing waste" (ACW) shall mean asbestos-containing material that has been accumulated during-abatement activities as wells as asbestos-contaminated objects requiring disposal as ACW.

Authorized Asbestos Disposal Facility - "Authorized Asbestos Disposal Facility" means a location licensed for handling and disposing of asbestos waste and approved by the Owner or Owner's representative.

Authorized visitor - "Authorized visitor" shall mean the Owner and his/her representative, and any representative of a regulatory or other agency having jurisdiction over the project.

Certificate of Completion - A Certificate of Completion shall mean the document issued by the Contractor signifying that the asbestos has been removed from the building in conformance with applicable regulations and this Work Plan.

Clean room - "Clean room" shall mean an uncontaminated area or room, which is parts of the worker decontamination enclosure system with provisions for storage of workers' street clothes and clean protective equipment.

Clearance air monitoring - "Clearance air monitoring" shall mean the employment of aggressive sampling techniques with a certain volume of air collected to determine the airborne concentration of residual asbestos fibers upon conclusion of an asbestos abatement project following a successful visual inspection of the work area(s) by the third party monitor.

Contractor - A Contractor means any person or entity, engaged in asbestos abatement work and is licensed by the New Jersey Department of Labor as an asbestos abatement contractor.

Construction Permit for Asbestos Abatement - A Construction permit for asbestos abatement means required official approval to commence any asbestos hazard abatement project. This permit is issued by the enforcing agency.

Critical Barrier - A Critical barrier means two layers of nominal six mil polyethylene sheeting that completely seals off the work area to prevent the distribution of fibers to the surrounding area, such as the opening between the top of a wall and the underside of ceiling construction, electrical outlets, non removable lights, HVAC systems, windows, doorways, entranceways, ducts, grilles, grates, diffusers, wall clocks, speaker grilles, floor drains, sink drains, etc.

Decontamination Unit - A Decontamination unit means serial arrangement of rooms or spaces for the purpose of separating the work area from the building environment upon entering the work area and for the cleaning of persons, equipment, and contained waste prior to returning to the clean environment.

Demolition - "Demolition" means the wrecking or taking out of any load-supporting structural member of a facility and any related razing, removing or stripping of a building.

DOT - "DOT" means New Jersey Department of Transportation.

Emergency Asbestos Abatement Project - "Emergency Asbestos Abatement Project" - means an asbestos abatement project, which was not planned but results from a sudden unexpected event. This includes operations required by non-routine failures of equipment.

Employee - An Employee means an asbestos abatement worker having a valid work permit, issued by the New Jersey Department of Labor and employed by the Contractor.

Enclosure - Enclosure means the construction of an airtight, impermeable, permanent barrier around asbestos-containing material to control the release of asbestos fibers into the air.

Encapsulant - A liquid which can be applied to asbestos material and which prevents the release of asbestos fibers from the material either by creating a membrane over the surface (bridging) or by penetrating into the material and binding its components together (penetrating).

Encapsulation - The coating or spraying of asbestos material with an encapsulant (sealant) or encapsulating agent.

Designer/Monitor/Consultant – Omega Environmental Services Inc.
280 Huyler Street
South Hackensack, New Jersey 07606

Engineering Controls - Engineering Controls - means all methods used to maintain low fiber counts in work areas and occupied spaces including, but not limited to, air management, barriers to ensure public safety and methods to confine airborne asbestos fibers to the work area.

EPA - "EPA" means the U.S. Environmental Protection Agency.

Equipment room - "Equipment room" shall mean a contaminated area or room which is part of the worker decontamination enclosure system used for the storage of contaminated clothing and equipment.

Flame-resistant Polyethylene Sheet - Flame-Resistant Polyethylene Sheet - means a single polyethylene film in the largest sheet size possible to minimize seams, nominal six mil thick, conforming to requirements set forth by the National Fire Protection Association Standard 701, Small Scale Fire Test for Flame-Resistant Textiles and Films.

Friable asbestos-containing material - "Friable asbestos-containing material" means any asbestos-containing material that hand pressure can crumble, pulverize, or reduce to powder when dry and non-friable asbestos-containing material that potentially can be broken, crumbled, pulverized or reduced to powder as a result of asbestos abatement.

Full Containment - A method of removing regulated ACM using a negative pressure containment. This method generally applies to large-scale work involving removal of TSI and surfacing ACM.

Glove Bag - "Glove Bag" means a manufactured polyethylene bag type of enclosure with built-in gloves, such as is placed with an air-tight seal around asbestos-containing material and which permits the asbestos-containing material contained by the bag to be removed without releasing asbestos fibers to the atmosphere.

HEPA filter - "HEPA filter" shall mean a high efficiency particulate air filter capable of trapping and retaining 99.97 percent of particles (asbestos fibers) greater than 0.3 micrometers mass median aerodynamic equivalent diameter.

HEPA vacuum equipment - "HEPA vacuum equipment" shall mean vacuuming equipment with a high efficiency particulate air filter capable of trapping and retaining 99.97 percent of particles (asbestos fibers) greater than 0.3 micrometers in mass median aerodynamic equivalent diameter.

Holding area - "Holding area" shall mean a chamber in the equipment decontamination enclosure located between the washroom and an uncontaminated area.

Individual - "Individual" means any human being.

Major Violation - shall mean any action, on the job performance, or lack of performance, that may place any individual at risk other than the worker who commits the violation.

Minor Violation - shall mean any action, on the job performance or lack of performance that may place the worker at risk.

MSHA - "MSHA" shall mean the Mine Safety and Health Administration

Movable object - "Movable object" shall mean a unit of equipment or furniture in the work area which can be removed from the work area.

Negative pressure equipment - A local exhaust system equipped with HEPA filtration. The system shall be capable of creating and maintaining a negative pressure differential between the outside and the inside of the work area.

NESHAP - "NESHAP" shall mean the National Emission Standards for Hazardous Air Pollutants (40 CFR Part 61).

NIOSH - "NIOSH" shall mean the National Institute for Occupational Safety and Health, 4676 Columbia Parkway, Cincinnati, OH 45226.

Non Friable Asbestos-Containing Material - Non Friable Asbestos-Containing Material" means any asbestos-containing material that hand pressure cannot crumble, pulverize or reduce to powder when dry.

OSHA - "OSHA" means the Occupational Safety and Health Administration of the U.S. Department of Labor.

Owner - Standard Chlorine Chemical Co.
1015-1035 Belleville Turnpike
Kearny, New Jersey 07032

Owner Representative – Key Environmental Inc.
456 Route 22 West, Suite D
Whitehorse Station, NJ 08889
Jacob Bourdeau, P.E., Project Manager

Person - "Person" means any individual, corporation, partnership, firm, association, sole proprietorship, the State of New Jersey or any of its political sub-divisions, or any other entity.

Personal OSHA air monitoring - Personal air monitoring as specified by the OSHA 29 CFR 1926.1101 and the OSHA Respiratory Protection Standard 29 CFR 190.34.

Personal protective equipment - "Personal protective equipment" (PPE) shall mean appropriate protective clothing, gloves, eye protection, footwear; head gear and approved respiratory protection.

Phase Contrast Microscopy - "Phase Contrast Microscopy" (PCM) shall mean the measurement protocol for the assessment of the fiber content of air by NIOSH Method 7400.

Polarized Light Microscopy - "Polarized Light Microscopy" (PLM) shall mean the measurement protocol for the assessment of the asbestos content of bulk materials by Interim Method for the Determination of Asbestos form Materials in Bulk Insulation Samples-40 CFR Part 763, Subpart F, Appendix A as amended on September 1, 1982.

Qualitative fit test - "Qualitative fit test" shall mean the individual test subject's responding, either voluntarily or involuntarily, to a chemical challenge outside the respirator face piece.

Quantitative fit test - "Quantitative fit test" shall mean exposing the respirator wearer to a test atmosphere containing an easily detectable, non-toxic aerosol, vapor or gas as the test agent. Instrumentation, which samples the test atmosphere and the air inside the face piece of the respirator, is used to measure quantitatively the leakage into the respirator.

Removal - "Removal" means the taking out or stripping of any asbestos-containing materials from surfaces or structural components of a facility and proper and legal disposal of such material.

Renovation - "Renovation" means altering, in any way other than demolition, one or more structural components. Operations in which load-supporting structural members are taken out are excluded.

Repair - "Repair" means the restoration of damaged asbestos-containing material; including but not limited to the sealing, patching, enclosing or encapsulating or damaged asbestos-containing material to prevent fiber release.

Shower room - "Shower room" shall mean a room between the clean room and the equipment room in the worker decontamination enclosure with hot and cold running water controllable at the tap and arranged from complete showing during decontamination.

Spot Repair - "Spot Repair" means any asbestos abatement performed within a facility involving not more than three (3) linear feet or three (3) square feet of asbestos-containing material.

Structural Component - "Structural Component" means any pipe, duct, boiler, tank, reactor turbine, furnace or other component at or in a facility or any structural member of a facility.

Structural Member - "Structural member" means any load-supporting member of a facility such as beams and load-supporting walls.

Surface barriers - "Surface barriers" shall mean the plasticizing of walls, floors, and fixed objects within the work area to prevent subsequent contamination from abatement work.

Surfactant - "Surfactant" shall mean a chemical wetting agent added to water to improve penetration.

Transmission Electron Microscopy (TEM) - "Transmission Electron Microscopy (TEM)" shall mean the measurement protocol for the assessment of the asbestos fiber content of air by Interim Transmission Electron Microscopy Analytical Methods-40 CFR Part 763, Subpart E, Appendix A.

Variance - A request for deviation from the acceptable or approved methods to a regulatory agency having a jurisdiction.

Visible emissions - "Visible emissions" shall mean any emissions containing particulate material that are visually detectable without the aid of instruments.

Visible Residue - "Visible residue" means any debris or dust on surfaces in areas within the enclosed work area where asbestos abatement has taken place and which is visible to he unaided eye. All visible residues are assumed to contain asbestos.

Washroom - "Washroom" shall mean a room between the work area and the holding area in the equipment decontamination enclosure system where equipment and waste containers are wet cleaned and/or HEPA vacuumed prior to disposal.

Waste decontamination enclosure system - "Waste decontamination enclosure system" shall mean the decontamination enclosure system designated for the controlled transfer of materials and equipment, consisting of a washroom and a holding area.

Water Column (W.C.) - W.C. shall mean unit of measurement for pressure differential.

Wet cleaning - "Wet cleaning" shall mean the removal of asbestos fibers from building surface and objects by using cloths, mops, or other cleaning tools that have been dampened with amended water.

Wet methods - "Wet methods" shall mean the use of amended water or removal encapsulant to minimize the generation of fibers during ACM disturbance.

Work Area - "Work area" means the specific area or location where the actual asbestos abatement work is being performed or such other areas of a facility which may be hazardous to public health as a result of such asbestos abatement.

Worker - "Worker" shall mean asbestos handler and/or asbestos handler supervisor.

Worker decontamination enclosure system - "Worker decontamination enclosure system" shall mean that portion of a decontamination enclosure system designed for controlled passage of workers, and other individuals and authorized visitors, consisting of a clean room, a shower room, and an equipment room separated from each other and from the work area by airlocks and curtained doorways.

1.09 REFERENCE STANDARDS AND NOTICES

A. Except to the extent that more explicit or more stringent requirements are written directly into these Specifications, all applicable codes, regulations, and standards have the same force and effect (and are made a part of the these specifications by reference) as if copied directly into these Specifications, or as if published copies are bound herewith. The Contractor shall assume full responsibility and liability for the compliance with all applicable Federal, State, local and city regulations pertaining to work practices, hauling, disposal, and protection or workers, visitors to the site, and persons occupying areas adjacent to the work area and/or site. The Contractor is responsible for providing medical examinations and maintaining medical records of personnel as required by the applicable Federal, State, and local regulations.

B. The Contractor shall hold the Owner and Owner's Engineer harmless for failure to comply with any applicable work, hauling, disposal, safety, health or other regulation on the part of himself or his employees.

C. Federal Regulations:
1. 29 CFR 1910.1001, "Asbestos" (OSHA)
2. 29 CFR 1910.1200, "Hazard Communication" (OSHA)
3. 29 CFR 1910.134, "Respiratory Protection" (OSHA)
4. 29 CFR 1910.145, "Specification for Accident Prevention Signs and Tags" (OSHA)
5. 29 CFR 1926, "Construction Industry" (OSHA)
6. 29 CFR 1926.1101, "Asbestos, Tremolite, Anthophyllite, and Actinolite" (OSHA)
7. 29 CFR 1926.500 "Guardrails, Handrails and Covers" (OSHA)
8. 29CFR 1910.120(e) "40 Hour HAZWOPER"
9. 40 CFR 61, Subpart A, "General Provisions" (EPA)
10. 40 CFR 61, Subpart M, "National Emission Standard for Asbestos" (EPA)
11. 49 CFR 171-172, "Transportation Standards" (DOT)

D. New Jersey Regulations

State requirements which govern asbestos abatement work, and hauling and disposal of asbestos waste materials include, but are not necessarily limited to, the following:

1. N.J.A.C. 7:26 2. N.J.A.C. 12:120 3. N.J.A.C. 8:60

E. Local Requirements

Local agencies which may govern or have certain requirements regarding asbestos abatement work, or hauling and disposal of asbestos waste materials include but are not necessarily limited to the following:

1. Building Department 2. Health Department 3. Fire Department

F. Standards and Guidance Documents:

Standards and guidance documents which apply to asbestos abatement work or hauling and disposal of asbestos waste material include but are not necessarily limited to the following:

a. American National Standards Institute (ANSI)

1) Fundamentals Governing the Design and Operation of Local Exhaust Systems Publication Z9.2-79
2) American National Standard Institute (ANSI) Z88.2-80, Practices for Respiratory Protection

b. American Society for Testing and Materials (ASTM)

1) Safety and Health Requirements Relating to Occupational Exposure to Asbestos E 84982.

c. Underwriters Laboratories, Inc. (UL) Standards: 586 (High Efficiency Particulate Air filter units).

G. Notices

1. The Contractor shall send by certified mail, all required notifications to all appropriate Federal, State and local governing agencies. Failure on behalf of the Contractor to file notifications as required shall not result in any extension of the completion date set forth in the Contract. Also, at least 7-days prior to initiation of abatement work, required signs must be posted.

2. U.S. Environmental Protection Agency

   Send Written Notification as required by USEPA National Emission Standards for Hazardous Air Pollutants (NESHAP) Asbestos Regulations (40 CFR 61, Subpart M) to the regional Asbestos NESHAP administrator. Contact at least 10 working days prior to beginning any work on asbestos-containing materials. Send notification to the following address:

   a. USEPA Region II
      Asbestos NESHAP Contact Air and Waste Management Division
      290 Broadway, New York, New York 10007
   b. At a minimum, the following information shall be included in notification for NESHAP:

      - Name, address and telephone number of Owner or Operator;
      - Description of the facility being demolished or renovated, including the size, age, and prior use of the facility;
      - Name, address, telephone number, and asbestos license number of the asbestos abatement contractor;
      - Estimate of the quantities of friable ACM present in the facility in terms of linear feet of pipe, and surface area on other facility components. For facilities in which the amount of friable asbestos materials is less than 80 linear meters (260 linear feet) on pipes and less than 15 square meters (160 square feet) on other facility components;
      - Location of the facility being demolished or renovated;
      - Scheduled starting and completion dates of demolition or renovation;
      - Nature of planned demolition and method(s) to be used;
      - Procedures to be used to comply with the requirements of USEPA NESHAP Asbestos Regulations (40 CFR 61 Subpart M);
        Name and location of the waste disposal site for friable asbestos waste;
      - Name and license number of the waste hauler;
      - The nature of asbestos abatement and quantities of ACM being removed;
      - Update the notification whenever the amount changes by at least 20 percent; and,
      - Re-notify EPA if start date changes from originally given date.

3. State and Local Agencies

   a. The Contractor shall send written notification as required by State (i.e., NJ DCA, NJ DOL, NJ DOH, NJDEP) and local regulations and obtain construction permit from the local Building Department for asbestos abatement pursuant to regulatory requirements prior to beginning any work on asbestos-containing materials. This is the sole responsibility of the Contractor. Send notification at least 10 working days prior to beginning any abatement work.

b. The Contractor shall post all notices required by applicable Federal, State and local regulations. Maintain two copies of applicable Federal, State and local regulations and standards. Maintain one copy of each at the work site. Keep on file in Contractor's office one copy of each.

c. The Contractor shall notify other entities at the job site of the nature of the asbestos abatement activities, location of asbestos-containing materials, requirements relative to asbestos set forth in these specifications, and applicable regulations. All notification shall first be cleared through the Owner's Representative.

d. The Contractor shall notify emergency service agencies including fire, ambulance, police, or other agency that may service the abatement work site in case of an emergency. Notification is to include methods of entering work area, emergency entry and exit locations, modifications to fire notification or fire fighting equipment, and other information needed by agencies providing emergency services. The Contractor shall clearly post telephone numbers and locations of emergency services including but not limited to fire, ambulance, doctor, hospital, police, and power and telephone Companies.

1.10 QUALITY ASSURANCE

1. The Contractor shall be licensed by New Jersey Department of Labor to perform asbestos removal work and shall have a minimum of 5-years experience in performing such work. The Contractor shall also have had a completion record of work performed on a minimum of five (5) projects of similar nature, size and scope.

2. All Contractor personnel involved with asbestos removal work must be thoroughly familiar with the standard operating procedures of the Contractor for removal work as well as all applicable Federal and State regulations governing asbestos removal work.

3. The Supervisor and Asbestos Abatement workers shall be accredited in accordance with EPA regulation 40 CFR Part 763, subpart E, Appendix C; and New Jersey Departments of Labor and Health regulations cited as N.J.A.C. 12:120 and 8:60, respectively. In addition, the site specific requirements call for all contractor's employees to be in full compliance with 29 CFR 1910.120(e) training requirements (40 Hour HAZWOPER), appropriate annual 8 hour refreshers, and confined space entry training (as may be deemed necessary). All asbestos workers must be trained in accordance with 29CFR 1026.1101, Asbestos; 29CFR 1926.59, Hazard Communication; 29CFR 1010.134, Respiratory Protection, and any other applicable Federal, State, or local training required for the work to be performed.

4. The contractor shall ensure full health and safety to protect his/her employees from exposure to asbestos, lead and other site-specific hazardous contaminants.

1.11 SUBMITTALS

A. Pre-Work Submittals: No later than 10 calendar days prior to mobilization to the site for initiation of abatement activities or as requested in the request for proposal (RFP), the Contractor shall submit 3 copies of the documents listed below:

1. Valid Contractor's Asbestos Removal license issued by NJ Department of Labor (NJ-DOL).

2. Certificate of insurance covering work of this Contract.
3. Work Schedule:
   a. Show the complete sequence of abatement activities and the sequencing of Work.
   b. Show the dates for the beginning and completion of each major element of Work including substantial completion dates for each Work Area, building, or phase.
   c. Show projected percentage of completion for each item, as of the first day of each month.
   d. Show final inspection dates.
4. Project Notifications: As required by Federal, State, and local regulatory agencies together with proof of transmittal (i.e. certified mail return receipt).
5. Name, location, and applicable licenses for primary and secondary landfill for disposal of asbestos-containing material and asbestos contaminated waste.
6. Summary of proposed materials, and equipment to be used.
7. Certification that vacuums, temporary ventilation equipment, and other equipment to be used meet the ANSI 29.2-79 requirement for airborne fiber filtration.
8. If rental equipment is to be used in work area or to transport asbestos contaminated waste, provide notice to rental agency stating intended use of equipment, with copy to the Owner.
9. Summary of the Contractor's workforce by disciplines. Include a notarized statement signed by the Contractor documenting that all proposed workers, by name, have received all required medical examinations and have been properly trained and certified in asbestos removal work, respirator use, to appropriate EPA and OSHA standards for asbestos removal. Include on statement Contractor's compliance with OSHA medical surveillance requirements.
10. The Contractor shall submit his/her Health and Safety Plan and Standard Operating Procedures for this project for use in complying with the requirements of these specifications and applicable regulations. The Plan shall include, but shall not be limited to: distribution and use of amended water, the sequencing of asbestos work, detailed schedules and dates, shift times, and work activities during that shift, the interface of other trades involved in the performance of work, methods to be used to assure the safety of building occupants and visitors to the site, security of the work areas, and a detailed description of the methods to be employed to control airborne asbestos fiber concentrations.
11. Written description of emergency procedures to be followed in case of injury or fire. This section must also include evacuation procedures, sources of medical assistance and procedures for access by medical personnel, routes to the nearest hospital and local agency contacts.
12. Level of respiratory protection intended for each operation for the project.

B. Project Closeout Submittals: Submit the following at the closeout of the Project (no later than 10 calendar days subsequent to final clearance of all abatement areas within a project phase):

1. OSHA compliance air monitoring records conducted during the Work, with results available no later than 24 hours of sample collection.
2. Daily progress log to be submitted daily.
3. A list of all Workers used in the performance of the Project, including name, social security number, and NJ DOL certification number. Provide a valid copy of asbestos certification.
4. For each Worker used in the performance of the Project, submit required employee statements including Medical Examination Statement, Worker's Acknowledgment Statement, Respirator Fit Test, and Employee Training Statement.
5. Certification for the laboratory that analyzed the OSHA personnel air samples to be submitted upon receipt.
6. A notarized "Release of Liens" in a form acceptable to the Owner. Such notarized release of liens shall certify that all sub-Contractors, labor suppliers, etc. have been paid their pro rate share of all payments to date for the project, that the Contractor has no basis for further claims, and will not make further claims for payment in any account after the first payment is made.

C. Manifests

Originals of all waste disposal manifests, seals and disposal logs must be provided within 30 calendar days of final clearance of all abatement areas within a project phase.

PART 2 PRODUCT

2.01 GENERAL

All products, equipment and material used by the Contractor shall be of sufficient size, configuration, and quality to perform the tasks required. Specific criteria and/or requirements for products used are discussed in Part 3 - Execution of this specification when appropriate.

PART 3 EXECUTION

3.01 GENERAL

A. The Contractor shall inspect and verify all ACM planned for removal from the subject building/ structure as described In Part 1 - Section 1.03 of the specifications under Scope of Work.

B. The contractor shall, in areas not easily accessible, use safe means to access and remove ACM.

C. The Contractor shall demonstrate that his ACM removal and waste disposal work does not impact in any way the areas beyond the work area. Any contamination of other building areas and materials shall be the sole responsibility of the Contractor. If it is determined by air or surface dust samples that building contamination has occurred as the result of negligence and/or poor work practices of the Contractor, the Contractor shall clean and/or dispose of any contaminated materials at no additional cost to the Owner. The Contractor shall be responsible for any damages claimed or lawsuits brought by persons exposed to such contamination.

D. Upon completion of the asbestos removal work, the Contractor shall provide appropriate certification to the Owner that the work areas are asbestos-free in accordance with Federal, State and local regulations and these specifications.

E. Signs shall be posted which meet the specifications set forth in 29 CFR 1926.1101 at all approaches to the work area. Signs shall be posted a sufficient distance from the work area to permit a person to read the sign and take precautionary measures to avoid exposure to asbestos.

F. Strictly adhere to all precautions necessary to the health and safety of the workers and authorized personnel in accordance with OSHA, EPA, the State of New Jersey and all local codes. The engineer or Owner's representative on site is not responsible for the health and safety of Contractor's personnel.

3.02 MATERIAL AND EQUIPMENT

The Contractor shall deliver all materials to the job site in their manufacturer's original container with the manufacturer's intact labels and Material Safety Data Sheets (MSDS). The materials and equipment used during all abatement activities shall conform, at a minimum, to required standards of these specifications, applicable regulations and the following:

A. For plasticizing, flame resistant, polyethylene sheeting with 6-mil thickness or greater, pertaining to requirements set for by the National Fire Protection Association Standards 701, in sizes to minimize the frequency of joints, shall be employed.

B. Duct tape of 2 inch minimum width and selected adhesive shall be capable of sealing joints of adjacent sheets of polyethylene, facilitating attachment of polyethylene sheets to finished or unfinished surfaces, and of adhering under both dry and wet conditions, including during the use of amended water. The duct tape shall meet or exceed the following specifications: tensile strength - 45 lbs. per in./8.0 kg per cm; adhesion to steel - 49 oz. per in./54.9 gm per mm.

C. Airtight and watertight containers shall be provided to receive and retain any asbestos-containing waste. Plastic bags used for waste storage or disposal shall be a minimum of 6-mil in thickness. All containers shall be labeled in accordance with *OSHA Regulation 29 CFR 1926.1101.*

D. Hand power tools used to drill, cut into, or otherwise disturb ACM shall be equipped with HEPA filtered local exhaust ventilation.

E. Electrical equipment shall be Underwriters Laboratory listed and approved.

F. Emergency lighting in case of power failure.

3.03 PERSONNEL PROTECTION

A. Protective Clothing

1. Coveralls: Provide sufficient disposable full-body coveralls for all workers and for any authorized visitors.

2. Boots: Provide work boots with non-skid soles, and where required by OSHA, foot protection, for all workers. Provide boots at no cost to workers. Do not allow boots to be removed from the work area for any reason, after being contaminated with asbestos-containing material. Dispose of boots as asbestos containing waste at the end of the work, or seal in 6-mil poly bags (with labels) for transportation to another work area.

3. Goggles: Provide eye protection (i.e. goggles) as required by OSHA for all workers involved in scraping, spraying, or any other activity which may potentially cause eye injury. Goggles are not required if full-face respiratory protection is used.

4. Gloves: Provide work gloves to all workers and require that they be worn at all times in the work area. Do not remove gloves from work area and dispose of as ACW at the end of the work.

5. Hard Hats: Provide hard hats to all workers and authorized visitors and require that they be worn at all times in the Work Area. Hard hats shall be worn over the hood of the coveralls.

B. Respiratory Protection Requirements

1. The Contractor shall have a respiratory protection program established, which shall be in compliance with ANSI Z228.2, OSHA 29 CFR 1910 and 1926, 40 CFR 763, Subpart G, and 42 CFR Part 84. A copy of the written program shall be maintained at the job site.

2. Respiratory protection shall be worn by all individuals inside the work area from the initiation of the asbestos project until all areas have successfully passed final air clearance monitoring.

3. All respiratory protection shall be MSHA/NIOSH approved in accordance with the provisions of 30 CFR Part 11. The Contractor shall provide all respiratory protection.

4. Workers shall be provided with personally issued, and individually marked respirators. Respirators shall not be marked with any equipment that will alter the fit of the respirator in any way. Only waterproof identification markers shall be used.

5. While organic vapors are not expected to reach action levels during the demolition or ACM removal activities, use of dual particulate and organic vapor cartridges may me required depending on the results of air monitoring conducted as part of the site-specific health and safety plan. Provide at a minimum HEPA/Organic vapor type cartridges labeled with NIOSH and MSHA certification and color-coded in accordance with ANSI Z228.2.

6. Use of disposable mask or quarter-face respirators shall not be permitted at this site.

7. For all asbestos abatement work other than preparation activities, non-friable removals and glovebag removal, powered air purifying respirators with full face piece and HEPA filters shall be used as a minimum when the fiber count in the work area is lower than 1 fiber per cubic centimeter (f/cc).

8. For work areas with fiber count greater than 1 f/cc, as determined through personal OSHA monitoring of personnel exposure, type "C" supplied air HEPA filter respirators in pressure demand mode shall be utilized.

9. The Contractor shall have on site sufficient quantity of respirators and appropriate filter cartridges for all asbestos workers and authorized visitors.

3.04 TEMPORARY FACILITIES

A. Locate temporary services and facilities where they will serve the work area adequately and result in minimum interference with the performance of the work. Relocate, modify, and extend services and facilities as required during the course of work so as to accommodate the work of this Contract.

1. The Contractor shall provide new or used materials and equipment that are undamaged and in serviceable condition and provide only materials and equipment that are recognized as being suitable for the intended use, by compliance with appropriate standards.

2. The Contractor shall provide all scaffolding, ladders and/or staging, etc. as necessary to accomplish the work of this contract. Scaffolding may be of suspension type or standing type such as metal tube and coupler, tubular welded frame, pole or outrigger type or cantilever type. The type, erection and use of all scaffolding shall comply with all applicable OSHA provisions. Equip rungs of all metal ladders, etc. with an abrasive non-slip surface. Provide a nonskid surface on all scaffold surfaces subject to foot traffic.

3. All ladders must be constructed of a material capable of being decontaminated. Damaged ladders or ladders constructed of wood or conductive metals will not be allowed in the work areas.

B. Water Service

1. Temporary Water Service Connection: All connections to water systems shall include backflow protection. Valves shall be temperatures and pressure rated for operation of the temperatures and pressures encountered. After completion of use, connections and fittings shall be removed without damage or alteration to existing water piping and equipment. Leaking or dripping valves shall be piped to the nearest drain or located over an existing sink or grade where water will not damage existing finish or equipment.

2. Water Hoses: Employ heavy-duty abrasion-resistant hoses with pressure ratings greater than the maximum pressure of the water distribution system to provide water into each work area and to each Decontamination Unit. Provide fittings as required to allow for connection to existing wall hydrants or sprouts, as well as temporary water heating equipment, branch piping, showers, shut-off nozzles and equipment.

3. Hot Water is not available on-site, therefore, the asbestos abatement contractor shall be responsible for providing temporary facilities equipped with hot water heaters sufficient to generate adequate hot water to support the work force, plus any authorized visitors.

4. Maintain hose connections and outlet valves in leak proof condition. Where spillage or leakage might damage finish work below an outlet, provide a drip pan of suitable size to minimize the possibility of water damage. Drain water promptly from pans as it accumulates.

C. Electrical Service

1. General: Comply with applicable NEMA, NEC and UL standards and governing regulations and codes for materials and layout of temporary electric service. Provide a weatherproof, grounded temporary electric power service and distribution system of sufficient size, capacity, and power characteristics to accommodate performance of work during the construction period. Install temporary lighting adequate to provide sufficient illumination for safe work and traffic conditions in every area of work. The Contractor shall provide an adequately sized generator to support asbestos removal work as necessary.

2. Temporary Power: Provide service with fused disconnects connected to the buildings main distribution panel, if available. Sub-panel and disconnect shall be sized and equipped to accommodate all electrical equipment required for completion of the work.

3. Ground Fault Protection: Equip all circuits for any purpose entering Work Area with ground fault circuit interrupters (GFCI). Locate GFCI's exterior to Work Area so that all circuits are protected prior to entry to Work Area. Provide circuit breaker type GFCI equipped with test button and reset switch for all circuits to be used for any purpose in work area, decontamination units, exterior, or as otherwise required by national electrical code, and OSHA.

4. Electrical Power Cords: Use only grounded extension cords; use "hard-service" cords where exposed to abrasion and traffic. Use single length or use waterproof connectors to connect separate lengths of electric cords, if single lengths will not reach areas of work.

5. Lamps and Light Fixtures: Provide general service incandescent lamps or fluorescent lamps of wattage indicated or required for adequate illumination as required by the work or this section. Protect lamps with guard cages or tempered glass enclosures, where fixtures are exposed to breakage by construction operations. Provide vapor tight fixtures in work area and decontamination units. Provide exterior fixtures where fixtures are exposed to the weather or moisture.

6. Lockout: Lockout all existing power to or through the work area as described below. Unless specifically noted otherwise existing power and lighting circuits to the Work Area are not to be utilized.
   a. Lockout power to Work Area by switching off all breakers serving power or lighting circuits in work area. Label breakers with tape over breaker with notation "DANGER circuit being worked on". Lock panel and have all keys under control of Contractor's Superintendent or Owner.
   b. Lockout power to circuits running through Work Area wherever possible by switching off all breakers serving these circuits. Label breakers with tape over breaker with notation "DANGER circuit being worked on". Sign and date danger tag. Lock panels and supply keys to Supervisor and Owner. If circuits cannot be shut down for any reason, label at

interval 4'-0" on center with tags reading, "DANGER live electric circuit. Electrocution hazard."

c. Verify the electrical system has been air gapped to the buildings if applicable. Lock-out Tag-out is not required if the power or utilities have been air gapped to the building of interest.

7. Temporary Electrical Panel: All power and lighting to the Work Area and Decontamination facilities are to be provided from temporary electrical panel. .Provide temporary electrical panel sized and equipped to accommodate all electrical equipment and lighting required by the work. Connect temporary panel to existing building electrical system. Protect with circuit breaker or fused disconnect. Locate temporary panel as directed by Owner.

8. Power Distribution System: Provide circuits of adequate size and proper characteristics for each use. In general run wiring overhead, and install vertically where wiring will be at least exposed to damage from construction operations.

9. Number of Branch Circuits: Provide sufficient branch circuits as required by the work. All branch circuits are to originate at temporary electrical panel. At minimum provide the following:

   a. One Circuit for each HEPA filtered fan unit.
   b. For power tools and task lighting, provide one temporary a separate 110-120 Volt, 20 Amp circuit, 4-gain outlet (4 outlets per circuit).

10. All lighting to the Work Area and Decontamination facilities is to be provided from temporary electrical panel described above. Provide the following or equivalent where natural lighting or existing building lighting does not meet the required light level:

    a. One 200-watt incandescent lamp per 1000 square feet of floor area, uniformly distributed, for general construction lighting, or equivalent illumination of a similar nature. In corridors and similar traffic areas provide one 100-watt incandescent lamp every 50 feet. In stairways and at ladder runs, provide one lamp minimum per story, located to illuminate each landing and flight. Provide sufficient temporary lighting to ensure proper workmanship everywhere by combined use of daylight, general lighting, and portable plug-in task lighting.
    b. Provide lighting in areas where work is being performed as required to supply a 100 foot candle minimum light level.
    c. Provide lighting in any area being subjected to a visual inspection as required to supply a 100 foot candle minimum light level.

D. First Aid Supplies: Comply with governing regulations and recognized recommendations within the construction industry, and per the site-specific HASP.

E. Fire Extinguisher: Provide Type "A" fire extinguisher for temporary offices and similar spaces where there is minimal danger of electrical or grease-oil-flammable liquid fires. In other locations provide type "ABC" dry chemical extinguisher, or a combination of several extinguisher, or a combination of several extinguisher of NFPA recommended types for the exposures in each case.

F. Scaffolding: During the erection and/or moving of the asbestos removal contractor's scaffolding care must be exercised, so that the polyethylene floor covering is not damaged. Clean debris from non-slip surfaces as necessary.

G. Installation:

1. Use qualified tradesmen for installation of temporary services and facilities. Locate temporary services and facilities where they will serve the entire project adequately and result in minimum interference with the performance of the work.
2. Require that tradesmen accomplishing this work be licensed as required by local authority for the work performed. Relocate, modify and extend services and facilities as required during the course of work so as to accommodate the entire work of the project.

H. Emergency Lighting: Inside the containment or work area, provide services for emergency lighting in case of power failure.

I. Tools and Equipment:

1. Shovels used must be constructed of plastic or rubber.

2. Nylon bristle brushes may be used for cleaning. Under no circumstances will steel bristle brushes be allowed.

3.05 WORKER AND WASTE DECONTAMINATION SYSTEM FOR ASBESTOS ABATEMENT

A. The following requirements shall be followed for the worker decontamination unit:

1. At all asbestos abatement projects, work areas shall be equipped with decontamination facilities consisting of: a clean room, a shower room, and an equipment room.

2. The decontamination enclosure system chambers shall be constructed to meet the criteria of the Specification. The decontamination enclosure shall be installed watertight to prevent water leaks. The interior shall be lined with two layers of 6-mil fire-retardant plastic sheeting, with a minimum overlap of 16 inches at seams and sealed (airtight) by tape and adhesive. The interior floor shall be sheathed with (2) layers of reinforced fire retardant plastic sheeting with a minimum overlap on the wall of sixteen (16) inches. The contractor shall ensure compliance with local building codes and other regulations governing temporary structures.

3. Curtained Doorways: Three overlapping sheets of 6-mil polyethylene shall be placed over a framed doorway and secured along the top of the doorway. Secure the vertical edge of the outer sheets along one vertical side of the doorway and the vertical edge of the center sheet along the opposite vertical side of the doorway. The sheets shall be weighted so that they close quickly after being released.

4. Air Locks: Air locks shall consist of 2 curtained doorways placed a minimum of 3 feet apart.

   a. Clean Room: In this room, persons remove and leave all street clothes and put on clean disposable coveralls. Approved respiratory protection equipment is stored in this area. The floor of the clean room must be kept dry at all times. At the end of each shift, the room must be cleaned using wet rags. Also, a lockable door may be installed. No asbestos-containing materials are allowed in this room. The clean room shall be equipped with suitable hooks, lockers, shelves, etc. for workers to store personal articles and clothing. **THIS IS NOT A CONTAMINATED AREA.**

b. Shower Room: Provide a completely watertight operational shower to be used by cleanly dressed workers heading for the Work area from the clean room or for showering workers headed out of the Work Area after dressing in the Equipment Room. Shower must be constructed so that water leakage is negligible and tested on-site in advance of work start-up. The shower shall have one shower per six full shift abatement people, calculated on the basis of the largest shift. Any leaking water must be cleaned immediately. Showers must be equipped with hot and cold running water, soap, and sufficient disposable towels for the number of workers at the job site. Arrange water shut off and drain pump operation controls, so that a single individual can shower without assistance from either inside or outside the Work Area. **THIS IS A CONTAMINATED AREA.**

Pump wastewater into a polyethylene lined 55-gallon drum located in the Work Area to be added to the asbestos waste. If the water is allowed by the work treatment workers to be pumped into a drain, provide 20 micron and 5 micron waste water filters in line to drain. Change filters at a minimum of once a day. Locate filters inside the shower unit, so that the shower pan catches the water lost during filter change.

c. Equipment Room: Work equipment, footwear, and all other contaminated work clothing are to be left here upon exiting Work Area. A walk-off pan filled with water shall be located in the work area just outside the equipment room for workers to clean foot coverings while exiting the work area. This is a change and transit area for workers. Provide a drop cloth layer of sheet plastic on the floor of the Equipment Room for every shift change. Roll drop cloth layer in upon itself at the end of each shift and dispose of as contaminated waste. **THIS IS A CONTAMINATED AREA.**

Each room shall be separated from the other and from the work area by airlocks such as will prevent the free passage of air or asbestos fibers and shall be accessible through doorways protected with three (3) overlapping 6 mil polyethylene sheets which shall be weighed, so as to fall into place when people pass through the area. The shower room shall be contiguous to the clean room and equipment room. All personnel entering or leaving the work area shall pass through the shower room. The number of showers provided shall satisfy the requirements of OSHA 29 CFR 1910.141. Hot and cold water shall be supplied to the showers. The equipment room (dirty room) shall be situated between the shower room and the work area and separated from both by means of suitable barriers or overlapping flaps such as will prevent the free passage of air or asbestos fibers.

Decontamination chamber doors shall be of sufficient height and width to enable replacement of equipment, which may fall, and to safely stretcher or carry an injured worker from the site without destruction of the chamber or unnecessary risk to the integrity of the work area. Such doors must be at least four (4) feet wide, and the distance between sets of doors must be at least four (4) feet.

5. No person or equipment shall leave the asbestos abatement project work area unless first decontaminated by showering, wet washing or HEPA vacuuming to remove all asbestos debris. No asbestos contaminated materials or persons shall enter the clean room.

6. Where feasible, decontamination systems shall abut the work area. In situations where it is not possible, due to unusual conditions, to establish decontamination systems contiguous to the work area, personnel shall be directed to remove visible asbestos debris from their persons by HEPA-filtered vacuuming prior to donning clean disposable coveralls while

still in the work area, and proceeding directly to a remote decontamination system to shower and change clothes to follow procedures described in 3.09(B).

7. In specific situations where the asbestos contractor determines that it is not feasible to establish a contiguous decontamination system at a work site, the asbestos contractor shall utilize a remote decontamination system. Such systems must be operated in conformance with *29 CFR 1926.1101, Appendix F.*

B. Remote Decontamination Facility

For exterior work on the roof, glove bag or tent procedures, controlled demolition of structures with ACM in-place, "heat machine" removal method for floor tiles and mastic removal methods when full containment enclosure is not required, the Contractor shall provide remote personnel decontamination enclosure system as specified above in section 3.05 A.

C. Waste/Equipment Decontamination Enclosure System:

This system is located adjacent to the work area. The equipment decontamination enclosure system, consisting of two totally enclosed spaces, shall be constructed as follows:

a. Equipment Washroom: An equipment washroom shall have two air locks: one adjacent to the work area and one common air lock which separate it from the holding area. The washroom shall have facilities for washing material containers and equipment. Gross removal of dust and debris from contaminated material containers and equipment shall be accomplished in the work area, prior to moving to the washroom.

b. Holding Area: A holding area shall share a common air lock with the equipment washroom and shall have a curtained doorway to outside areas. A hinged, lockable door shall be placed at the holding area entrance to prevent unauthorized access into the work area.

c. Remote Decontamination Facility: For exterior work on the roof, glove bag or tent procedures, when full containment enclosure is not required, the Contractor shall provide remote personnel decontamination enclosure system as specified above in Section 3.05 A & B.

3.06 WORK AREA PREPARATION

A. General Work Place Preparation Requirements

The following procedures shall be followed during the conduct of abatement activities on large asbestos projects:

1. The Contractor shall provide proper notification as approved by the Owner and as required under Section 1.03 & 1.09 of this specification.

2. No asbestos abatement work including preparation shall be performed or continued without having a certified supervisor at the work area.

3. The work place shall be vacated by the occupants prior to work place preparation and until successful clearance air monitoring.

4. Whenever required, the electric power to all work areas shall be shut down and locked out as described in Section 3.04. To our knowledge, majority of the building do not have any live power.

5. Provide and display danger signs at every entrance to the work areas in clearly visible locations indicating that asbestos removal work is being conducted and unauthorized and not protected persons should not enter.

   Signs must use the following legend:

DANGER
ASBESTOS
CANCER AND LUNG DISEASE HAZARD
RESPIRATORS AND PROTECTIVE CLOTHINGS
ARE REQUIRED IN THIS AREA

6. Prior to erection or installation of decontamination enclosure systems and erection of isolation barrier(s), ACM that may be disturbed during this activity shall be

   a. removed using tent procedure (including engineering controls); and/or
   b. Treated via wet methods.

   Removal to the above methods shall be limited to a maximum of one-foot wide strip running the length and/or height of the partition and is allowed only to facilitate erection of the partitions.

7. The worker decontamination enclosure system shall be installed or constructed prior to plasticizing the work area or before disturbing ACM. The waste decontamination enclosure system shall be installed or constructed prior to commencement of abatement.

8. The Contractor shall be responsible for cleaning-up any visible excrements from birds, animals, etc. in the building work areas prior to the preparation of the abatement work areas.

9. Abatement shall not commence until work place preparation has been completed.

10. Movable objects not contaminated with asbestos debris within the proposed work areas shall be pre-cleaned (i.e., prior to commencing abatement) using HEPA-filtered vacuum equipment and/or wet cleaning methods and such objects shall be removed from the work area and or salvaged prior to starting the abatement. Movable objects which are contaminated by ACM but can be thoroughly cleaned shall be HEPA-vacuumed and removed from the work area. Movable objects which cannot be decontaminated (i.e., upholstered furniture, etc.) shall be left in the work areas to be removed as ACM. Fixed objects, which will remain within the proposed work areas, shall be pre-cleaned using HEPA filtered vacuum equipment and/or wet cleaning methods as appropriate and enclosed with 6-mil plastic sheeting sealed to protect from re-contamination.

11. The asbestos contractor shall be responsible for clearing and grubbing of the shrubs/trees in order to safely access each work area/building.

3.07 WORK AREA ENTRY AND EXIT PROCEDURES

The following procedures shall be followed during the conduct of abatement activities as necessary and in accordance with all applicable rules and regulations.

A. Entrance procedures

1. All workers and authorized visitors shall enter the work area through the worker decontamination enclosure system, unless it's a remote unit. All workers and visitors, exiting the work area must follow the proper decontamination procedure as described in this Work Plan.
2. All individuals who enter the work area shall sign the log, located in the clean room, upon each entry and exit. The log shall be permanently bound and shall identify fully the facility, Owner, agents, contractor(s), the project, each work area and worker respiratory protection employed. The log shall be available for examination during general business hours by the Owner and the workers.
3. All individuals before entering the work area, shall be familiar with all posted regulations, personal protection requirements and emergency procedures. The log headings shall indicate, and the signatures shall be used to acknowledge, that the regulations and procedures have been reviewed and understood by all persons prior to entering the work area. The posting and log headings shall be in English and in the language of the majority of the asbestos handlers.
4. All individuals shall proceed first to the clean room, remove all street clothing, store these items in clean sealable plastic bags or a locker, and don respiratory protection and disposable coveralls.

B. Exit Procedures

1. Before leaving the work area, each individual shall remove the gross contamination from the outside of the respirators and protective clothing by wet cleaning, and/or HEPA vacuuming.
2. In the equipment room, all personal protective equipment except respirators shall be removed. Disposable clothing shall be deposited into labeled containers for disposal. Reusable contaminated clothing, footwear, and/or headgear shall be stored in the equipment room when not in use.
3. Still wearing a respirator, each person shall proceed to the shower room, clean the outside of the respirator and the exposed face area under running water prior to removal of the respirator, and then fully and vigorously shower and shampoo to remove residual asbestos contamination. Respirators shall be washed thoroughly with soap and water or a suitable sanitizing agent. Various types of respirators may require slight modification of these procedures.
4. After showering and drying, personnel shall proceed to the clean room.

C. Equipment and Waste Container Decontamination and Removal Procedures

The following procedures shall be followed whenever equipment or containers are removed from the work area during asbestos abatement projects.

1. The clean room/holding area shall be entered from uncontaminated areas with appropriate personal protective equipment; or prior to the start of waste transfer, these workers shall have exited the work area, fully decontaminated, and subsequently donned clean personal protective equipment.

2. Wet cleaning and/or HEPA vacuuming in the work area before transferring such items into the decontamination enclosure system shall clean external surfaces of contaminated containers and equipment. Contaminated workers shall not enter the washroom during this procedure.
3. The cleaned containers of ACM and equipment shall be placed in uncontaminated leak-tight plastic bags or sheeting as the item's physical characteristics demand. Air volume shall be minimized and the bags or sheeting shall be sealed. Items that may puncture or tear the plastic bags or sheeting shall be placed in a hard walled container and sealed.
4. The clean re-containerized items shall be moved into the airlock for subsequent transfer to the holding area. The washroom workers shall not enter this airlock or the work area until waste removal is finished for that period.
5. Workers who have entered from uncontaminated areas with appropriate personal protective equipment shall remove re-containerized items and cleaned equipment from the airlock to the holding area.
6. The re-containerized items of ACM and cleaned, bagged equipment shall be placed in open top, watertight plastic carts. These carts shall be held in the holding area pending removal. The carts shall be HEPA vacuumed or wet-cleaned following the removal of the containers of ACM from them.
7. The exit from the waste decontamination enclosure system shall be secured by the Contractor to prevent unauthorized entry.
8. The carts shall be stored in a holding area of the work site.
9. Plastic shall be laid down underneath the ACM being removed unless otherwise approved by the onsite Owner's representative.

FAILURE TO COMPLY WITH THIS SECTION OR ANY OTHER SECTION OF THESE SPECIFICATIONS WILL CAUSE THAT INDIVIDUAL'S IMMEDIATE DISMISSAL FROM WORK SITE FOR THE REMAINDER OF THE PROJECT.

3.08 ABATEMENT PROCEDURES

A. General ACM disturbance, handling and removal Procedures

Remove ACM as follows and in strictest accordance with Federal and State of New Jersey regulations.

1. Once all work area preparation is complete, decontamination chambers installed, and engineering controls have been established per this Work Plan, all lock outs and plasticizing performed, received a written approval from the Owner's representative, then, and only then, shall the Contractor commence gross removal of ACM.
2. Abatement of ACM shall be done by wet methods only.
3. ACM shall be sprayed with water or amended water in sufficient frequency and quantity to control fiber release. Accumulation of standing or free water is prohibited. Dry removal of asbestos materials is prohibited.
4. Large components removed intact that cannot be containerized shall be maintained wet, wrapped (minimizing excess air) in at least one layer of 6-mil polyethylene sheeting, and secured by sealing with tape.
5. After completion of all stripping/removal work, surfaces from which asbestos-containing materials have been removed shall be cleaned (e.g., wet-brushed and/or wet-cleaned) to remove all visible residue/debris. After removal of visible debris, clean surface with HEPA vacuum.
6. Carefully lower all properly bagged materials. Do not allow bags of ACM to be dropped or thrown to the ground. For asbestos materials, dropped distances greater than 10 feet, dust tight, enclosed, inclined chutes must be used. If bagging of the removed ACM is not required, as

may be the case with the transite and roofing materials removal, carefully place the removed ACM into lined carts for transfer to the waste container or place directly into a lined container for disposal without breaking or further disturbing the waste.

7. After the work area has been inspected by the Owner's representative and rendered free of visible debris, a thin coat of a pigmented (non-transparent) encapsulating agent shall be applied to all surfaces in the work area from which ACM was removed, to lockdown non-visible fibers.

B. Exterior Non-Friable Transite/Siding, Caulking/Glazing, Debris and Fire Door Removal

1. A contiguous space within a radius of 10 feet shall be roped off and regulated to allow only certified workers and authorized visitors to enter.
2. A remote worker and waste decontamination unit shall be constructed outside the work area, and attached to common spaces leading to individual work areas. The decontamination system shall be in place for the entire duration of the abatement activities.
3. All asbestos handlers shall wear two disposable suits, including gloves, hood and footwear, and appropriate respiratory equipment, after removing street clothes in the clean room.
4. Each worker, before leaving the tent work area, shall clean the outside of the respirators and outer protecting clothing by wet cleaning and/or HEPA vacuuming. The outer disposable suit shall be removed in the work area and the workers shall then proceed to the shower room. The inner disposable suit and respirator shall be washed thoroughly before removing and prior to aggressive shower.
5. Each abatement team shall be equipped with appropriate tools, rags, a portable supply of amended water, and a HEPA vacuum. After the ACM caulking material is adequately wetted, it shall be stripped using hand tools, with the ACM caulking material being directly bagged or dropped into a flexible catch basin and promptly bagged. The stripped joints shall then be HEPA vacuumed, and then wet-wiped, to remove any loose debris. All exposed joints shall be coated with an encapsulant.
6. The transite/galbestos panels or siding shall be carefully removed in one piece using hand tools. The panels shall not be broken.
7. Upon completion of the stripping at a location and before moving to the next, the surfaces of the immediate work area shall be rendered free of visible debris. Next the plastic covering of the platform or flooring shall be carefully removed and bagged, and a new plastic sheet applied, and secured, at the next work area.
8. If visible emissions are noted during the exterior work or if the asbestos-in-air concentrations exceed 0.01f/cc or the measured background level, all work shall stop. Abatement procedures shall be reevaluated and adjusted as necessary to eliminate visible emissions.
9. If transite, caulking, glazing or similar non-friable materials are being removed from within the building's interior, then clearance air sampling utilizing Transmission Electron Microscopy (TEM) methods is required on large projects by Omega Environmental Services. Small projects can be cleared using Phase Contrast Microscopy (PCM) method. No clearance is required for strictly exterior work.

C. Removal of Built-up Roofing, Flashing and Tar/Mastic Materials from Collapsed Structures

1. The buildings will be demolished and the roofs will be abated on the ground. All layers of the built-up bituminous roofing, embedded ballast, flashing, mastic, etc. shall be removed using non-friable means down to non-asbestos substrate. The material may be scraped off the underlying decking and components in one piece, or removed by cutting in sections and peeling it off. The material shall be sprayed with amended water prior to its removal, and shall be kept adequately wet throughout.

2. Abatement shall not be carried out during adverse weather conditions (e.g., precipitation, heavy winds, etc.).
3. The work area on the roof shall be cordoned off, and only authorized persons shall have access to the designated work areas.
4. A remote worker and waste decontamination unit shall be constructed outside the work area(s), and should be in close proximity to or attached to common spaces leading to individual work areas. The decontamination system shall be in place for the entire duration of the abatement activities.
5. Manual methods of removal are recommended; however, if hand-held power tools are used to drill, cut into, or otherwise disturb the ACM, the power tools shall be equipped with HEPA-filtered local exhaust ventilation and operated in a manner to prevent potential fiber release.
6. Enclosed dust chutes shall be employed to load the ACM roofing waste from the roof to the waste container.
7. The work areas shall be allowed to dry completely before visual inspection is conducted. The inspection shall confirm the absence of ACM and ACM bags or debris in the work area(s).
8. All work shall be done using appropriate OSHA approved safety harnesses when working close to the building edge or on roofs with questionable structural integrity. If the roof is deemed unstable, the ACM roofing can be brought down using machinery and segregated from the non-asbestos components manually.
9. If visible emissions are noted during the exterior work or if the asbestos-in-air concentrations exceed 0.01f/cc or the measured background level, all work shall stop. Abatement procedures shall be reevaluated and adjusted as necessary to eliminate visible emissions.
10. If any ACM roofing debris falls within the building, then following its proper cleanup, the interior portions of the building must be visually inspected and cleared using Phase Contrast Microscopy (PCM) method.

3.09 CLEAN-UP PROCEDURES

A. Preliminary Clean-Up Procedures

The following clean-up requirements shall be followed during the conduct of abatement activities on asbestos abatement projects:

1. Visible accumulations of loose asbestos-containing waste material shall be cleaned up:

    a. Whenever sufficient asbestos-containing waste material to fill a single leak-tight container of the type commensurate with the properties of asbestos-containing waste materials has been removed, or
    b. At the end of each work shift, whichever shall occur first. Removed material shall be maintained wet until cleaned up.

2. Visible accumulations of asbestos-containing waste material shall be containerized utilizing non-metallic dustpans and non-metallic squeegees or HEPA vacuums.
3. Metal shovels shall not be used to pick up or move accumulated asbestos-containing waste material or any other debris in the vicinity of isolation or surface barriers.
4. Accumulations of dust/debris shall be cleaned off all surfaces of the work area on a daily basis, using HEPA vacuum or wet cleaning methods.
5. The waste decontamination enclosure system shall be wet cleaned twice-using wet cleaning methods upon completion of waste removal. When the worker decontamination enclosure shower room alternates as a waste container wash room, the shower room shall be washed immediately with cloths or mops saturated with a detergent solution prior to wet cleaning.

6. The worker decontamination enclosure system shall be wet cleaned/HEPA vacuumed, as appropriate, after each shift change and meal break.
7. Excessive water accumulation or flooding in the work area shall require work to stop until the water is collected and disposed of properly.

B. Additional Clean-up Procedures (Final)

Additional clean-up procedures shall be performed after completion of the removal activities.

1. After removal of visible accumulations of asbestos-containing waste material, a HEPA vacuuming shall be performed on all surfaces. A wet-dry shop HEPA vacuum, dedicated to asbestos abatement, may be used to pick up excess water and gross saturated debris.
2. All surfaces in the work area shall be wet cleaned (first cleaning).
3. Then, all objects and surfaces in the work area shall be HEPA-vacuumed and wet cleaned a second time.
4. A thorough visual inspection will then take place to verify the absence of asbestos-containing visible debris/dust.
5. All containerized waste shall be removed from the work area(s) through the decontamination enclosures and the holding area.
6. All tools and equipment shall be removed from the work area and decontaminated in the waste decontamination enclosure system. Cloths, mops, and other cleaning aids shall be disposed of as asbestos-containing waste material.
7. The waste route from the work area(s) to the waste decontamination chamber and to roll-off container shall be plasticized and secured.

3.10 APPLICATION OF SEALANT

A. For removal of non-friable ACM roofing/flashing, transite (intact), exterior caulking, etc., application of a sealant/encapsulant shall not be required, but will be made optional at discretion of the on-site Owner's representative on the case-by-case basis.
B. Perform the following after the completion of the abatement and successful visual inspection:

1. Dispose of all plastic sheeting, tape and other debris in sealed plastic bags labeled as asbestos contaminated waste.
2. Dispose of all cloths or sponges used in the cleaning operations as contaminated waste.
3. Remove all residues left on floors, ceilings, light fixtures, or other surfaces.
4. Issue Certificate of Completion to the Owner.

3.11 ASBESTOS WASTE DISPOSAL

A. The Contractor shall package, label, and remove all asbestos waste from the work area in accordance with New Jersey DEP regulations, all other applicable regulations, and as specified below. Packaging shall be accomplished in a manner that minimizes waste volume, but insures waste containers shall not tear or break.
B. Asbestos wastes may include building materials, insulation, disposable clothing and protective equipment, plastic sheeting and tape, exhaust systems or vacuum filters, contractor equipment, or other materials designated by state or local authorities which have been potentially contaminated with asbestos and have not been fully cleaned.

C. Waste Labeling

1. Warning labels, having waterproof print and permanent adhesive in compliance with OSHA, EPA and NJDEP/DOT requirements shall be affixed to or printed on the sides of all waste bags or transfer containers. Warning labels shall be conspicuous and legible, and contain the following words:

DANGER
CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
CANCER AND LUNG DISEASE HAZARD

2. In compliance with NESHAP, 40 CFR, Part 61.150, all waste containers or bags shall be labeled with the following generator information:

   a. Name of waste generator
   b. Location of where waste was generated
   c. Waste shall be labeled with pre-printed labels having Owner's identification and other data based upon the NJDEP waste classification results.

D. Wetting of Waste: A fine water spray shall be used to keep the top layers of waste in containers thoroughly wet at all times. When a waste bag is full, air within the bags shall be evacuated with a HEPA equipped vacuum and be securely sealed with tape or other secure fastener.

E. Decontamination of Fiber Drums (if utilized): The Contractor's use and decontamination of fiber drums shall be in accordance with all applicable codes and regulations.

F. Waste Container Storage: The container used for the storage of bagged or loose asbestos - containing waste shall be an enclosed dumpster. Open top, roll-off containers are allowed, as long as the no DOT regulations are violated and the waste facility accepts waste containerized in this way. Dumpster shall have a solid metal door with padlock. As a minimum, line the cargo area with two layers of 6-mil polyethylene sheeting to prevent contamination from damaged or leaking containers. Floor sheeting shall be installed first and shall extend up the sidewall 24 inches minimum. Wall sheeting shall be overlapped and taped securely into place. A waterproof liner in place of the 2 layers of poly is acceptable, as long as the waste is covered on all sides to prevent its dislodging during the transportation. Ensure that bags, if used, placed in dumpsters are undamaged. Warning signs shall be posed on the Dumpster in accordance with Sections *29 CFR 1926.1101 (k) (1)* of the OSHA regulations.

G. Waste Removal Scheduling: All waste containers shall be decontaminated and removed from the site before final cleanup is started and isolation barriers are taken down unless otherwise coordinated with the Owner's on-site representative.

H. Waste Transportation and Disposal

   a. It is the responsibility of the Contractor to determine and ensure that they are in compliance with: 1) current waste handling regulations; and 2) the current regulations for transporting and disposing waste at the ultimate disposal landfill. The Contractor must comply fully with these regulations, and with all U.S. Department of Transportation, State, local, and EPA requirements.
   b. The Contractor's waste hauler and disposal contractor shall maintain a valid hazardous waste transporter's permit and identification number; and obtain complete, and fully comply with any other local hazardous waste manifesting requirements.
   c. The asbestos waste disposal site selected by the Contractor must be pre-approved by the Owner or Owner's representative.
   d. Exercise care before and during transport to ensure that no unauthorized persons have access to the containerized ACW.

e. Do not transport ACW on open trucks without having adequately sealed the waste within the container on all sides with either a liner or 2 layers of 6-mil poly. Treat and dispose of drums that have been contaminated as asbestos-containing waste.
f. No back hauling or return trips will be permitted.
g. A copy of ACW manifest forms shall be sent to the Owner after each disposal is completed and all required data and signatures have been inserted.
h. The Contractor shall return the original Disposal Certificate (landfill receipt) to the Owner within 10 working days of waste shipment from the site.
i. Final or progress applications for payments will not be processed unless all waste manifests generated to date have been received by the Owner or Owner's representative.

3.12 ALTERNATE WORK PRACTICES

The Contractor shall submit application for alternate work practices to the Owner or Owner's representatives, and the NJ-DOL/DOH as applicable for any alterations, modifications or non-conforming methods intended of asbestos removal. The Owner and the NJ-DOL/DOH may or may not approve proposed alternative work procedures. The alternative procedures shall be submitted in writing and in advance for review and shall provide equivalent or a greater measure of asbestos emission control.

3.13 AIR MONITORING

A. General

The Contractor shall perform all required personal OSHA air monitoring on all his/her employees, with results to be posted no later than 48-hours following the sampling.

B. Personal OSHA Monitoring

1. The Contractor's shall provide an OSHA Competent Person to be responsible for performing personal air monitoring as specified by the *OSHA 29 CFR 1926.1101* and the *OSHA Respiratory Protection Standard 29 CFR 190.34*.
2. A minimum of 20% of all workers in each working category (i.e., gross removal, final clearance, etc.) must be monitored each day of asbestos removal activities.
3. Phase Contrast Microscopy in accordance with NIOSH 7400 shall be used to analyze personal air samples. The Contractor shall arrange and pay for all costs of the testing. Laboratories used shall be currently enrolled in the American Industrial Hygiene Association Proficiency Analytical Testing Program or an equivalent recognized program.
4. Results of all OSHA monitoring shall be provided to the Owner within 24 hours after collection of the samples. Work may not be allowed to resume until the Owner receives OSHA monitoring results in a timely fashion.

C. Post Abatement Clearance Criteria and During Abatement Air Sampling **(for work inside the building and within a containment only)**

The Contractor shall request the third party Monitor for final inspection upon completion of the project.

1. This final inspection shall include a thorough visual inspection of the work site and clearance air monitoring. A sufficient number of air samples shall be taken to be representative of the work area. The Monitor retained by the Owner shall perform the final clearance visual inspection.

2. Upon satisfactory visual inspection, the Monitor shall perform final clearance aggressive air sampling.
3. Prior to sampling, use a forced air equipment (leaf blower) to agitate invisible fibers that may be adhered to all surfaces within the work area. The forced air shall be swept against all walls, ceilings, floors, ledges and other surfaces in the room. This procedure shall be continued for 5 minutes per 10,000 cubic feet of room volume. Particular attention shall be made in areas with dead-air conditions.
4. One propeller-type fan (Box fan) per 10,000 cubic feet of room volume shall be installed and operated at low speed directed toward the ceiling for the entire period of sample collections.
5. The pumps shall be calibrated before and after the sample is collected.
6. For abatement actions greater than or equal to 160 square feet (SF), or greater than or equal to 260 linear feet (LF), clearance air sampling shall be conducted using Transmission Electron Microscopy (TEM) in accordance with 40 CFR 763.90(I)(3) and (4). For abatement actions less than 250 LF/160 SF, collect five (5) air samples in each work area, which may be analyzed using NIOSH 74OO methodology.
7. During abatement air samples may be analyzed using PCM, in accordance with NIOSH method 7400.
8. Collect one sample for every 10,000 square feet of work area, with a minimum five samples.
9. At minimum, collect air samples at the following locations:

    - Clean room, workers decontamination unit
    - Holding area, Waste decontamination unit
    - Within 5 feet of emergency exit critical barrier

10. If the results of outside air samples exceed the 0.01f/cc criterion, work shall be halted and contingency plan implemented to identify and rectify the source of emission.

D. Monitoring During the Abatement

The State of New Jersey does not require that pre-demolition, non-Subchapter 8 work have air monitoring conducted during the course of the asbestos abatement. However, the Owner may require the project to be monitored either full-time or on part-time basis in order to ensure the Contractor's compliance to the applicable State, Federal and local regulations and requirements and protect the Client from any unforeseen liabilities.

3.14 CONTINGENCY PLAN

A. Contingency plan during abatement shall be implemented as described below. These are the minimum requirements that shall be enforced on an asbestos project. These requirements shall not limit the on site Monitor from instituting additional requirements, if necessary, for the protection of the building occupants.

1. If the fiber levels outside the work area exceed 0.010 f/cc criterion, the following procedures shall be implements:

    a. The monitor and the Contractor supervisor shall investigate and evaluate the engineering controls to determine the source of the high air level.
    b. An additional set of split samples may be collected. If the result of the air samples is less than or equal to 0.01 f/cc the no further actions are necessary. If the result of the air sample exceeds 0.010 f/cc criterion, the Contractor, in consultation with the on site AST, shall choose the option of cleaning and retesting by PCM analysis or analyzing the split sample by TEM analysis. If the result

of the TEM analysis exceeds 70 structures per square millimeter, cleaning activities shall be conducted.

c. The decision as to the timing of the cleaning activity shall be made by the on site AST in consultation with the building Owner and the Contractor.
d. Cleaning shall include, but not be limited to, wet wiping, HEPA vacuum, and misting the air. Cleaning the affected area shall be continued outside of containment and PCM sampling shall also be continued until the result in the area is equal to or less than 0.010 f/cc by either PCM or TEM analysis.

B. If a power outage occurs when containment with negative pressure differential is utilized for abatement, all work activities must be suspended until the power has been restored.
C. Security shall be required as follows:

The site security shall be the sole responsibility of the property Owner. The work area security shall be the responsibility of the asbestos abatement contractor. The Owner shall not be responsible for safety of contractor's equipment left onsite.

3.15 LEAD MATERIALS AND LEAD-BASED PAINT

A. Lead-based paint (LBP) on metal surfaces, as well as lead bolts holding transite panels and lead moldings around windows and doors were identified to be present throughout the facility in/out the onsite buildings/ structures. Surfaces covered with LBP cannot be torch cut or burned unless proper PPE, testing, etc. are implemented. Removal of lead bolts (only the front cap contains lead) and mouldings shall be performed using manual methods only.
B. OSHA Lead in Construction Standard (29CFR 1926.62) requirements shall apply to this aspect of the project including the following:

i. Worker lead awareness training
ii. Work blood lead testing
iii. Worker exposure monitoring
iv. Use of proper PPE
v. Use of a hand wash station on-site

3.16 POST-PROJECT CLOSE-OUT

A. The Contractor shall provide all required documentation as required by this specification once his/her work is complete, visual inspections and final clearances passed and asbestos waste removed off-site for disposal. This should include but not limited to: bound copy of the daily log containing log of daily work activities, containment entry/exit logs, copy of recording manometer charts, waste shipment records, personal air monitoring laboratory reports and chain-of-custody documentation, and project completion certificate. Final payment shall not be made to the Contractor until all required documentation is submitted and verified.
B. The Contractor shall remove all equipment, tools, materials and waste generated off the site once all work is completed and approved by the Owner or Owner's Representative.

END OF SECTION

LIST OF SUBMITTALS

Project Name: _____

Address: _____

_____

Project Number: _____

SUBMITTAL APPROVED	DATE SUBMITTED	COMMENTS
Pre-Project Submittal:		
1. Insurance certificate naming owner and Omega as "additional insured"		
2. Required bonds		
3. List of Subcontractors, if any		
4. Health and Safety Plan		
5. Proof that required permits and variances have been obtained		
6. Documentation of Required Qualifications of Workers		
7. Proof of a respiratory protection program		
8. Landfill Certification		
9. MSDS of chemicals to be used on this project		
10. Asbestos Removal and Disposal Work Plan		
11. Notifications		
12. Emergency Action Plan		
During Work Submittal		
1. Schedule of Work Changes		
2. Results of all personnel air monitoring performed by the Contractor (OSHA).		
3. A certified, signed, and copy of each "Waste Shipment Record" form		
4. A copy of the bound log book.		

Post Project Submittal:		
1. A notarized "Release of Liens"		
2. Notarized copies of a daily log		
3. Compilation in chronological order of all air monitoring records pertaining to this project		
4. Compilation of all completed and signed Waste Shipment Record forms		
5. Copies of notifications to applicable agencies		
6. Certificate of Completion		

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APPENDIX B

AIR MONITORING PLAN

APPENDIX B

AIR MONITORING PLAN
BUILDINGS 16, 19 AND 20 DEMOLITION AND ASBESTOS REMOVAL ACTIVITIES
STANDARD CHLORINE CHEMICAL CO. INC SITE
KEARNY, NEW JERSEY

Prepared for:

The Peninsula Restoration Group
(Standard Chlorine Chemical Co., Inc., Tierra Solutions, Inc. and Beazer East, Inc.)

Prepared by:

Key Environmental, Inc.
200 Third Avenue
Carnegie, Pennsylvania 15106

APRIL 7, 2010

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1.0 INTRODUCTION

This Air Monitoring Plan (demo AMP) details the scope of work and procedures for air monitoring to be implemented in connection with the asbestos abatement and/or demolition of Buildings 16, 19 and 20 at the Standard Chlorine Chemical Co., Inc. (SCCC) Site (SCCC Site or Site) in Kearny, New Jersey. This demo AMP outlines the ambient air monitoring guidelines for potential airborne dust during demolition, and sampling for asbestos fibers during asbestos abatement activities. These guidelines have been developed to protect off-site receptors during active building demolition. Air monitoring for workers is addressed in the site-specific health and safety plan (HASP) for demolition activities.

This demo AMP is based in part on the New Jersey Department of Environmental Protection (NJDEP) approved Air Monitoring Plan for the Interim Response Action Workplan (IRAW AMP) for the Site[1].

This demo AMP outlines: the establishment of Contaminant Action Levels (CAL) and Daily Action Levels (DAL) for potential fugitive dust from building demolition activities; airborne fibers associated with asbestos removal; air monitoring procedures; and corrective action procedures, if needed. Note that the establishment of the CALs is risk-based and is more conservative than the use of Occupational Safety and Health Administration (OSHA) Permissible Exposure Limit (PEL) for Particulates Not Otherwise Regulated (PNOR) or the Threshold Limit Value (TLV) for total particulates specified by the American Conference of Governmental Industrial Hygienists (ACGIH).

1.1 OBJECTIVES

The objective of this demo AMP is to verify that potential emissions are protective of potential off-Site receptors during active building demolition and asbestos abatement activities, and to establish procedures to control potential emissions where necessary. More specifically, the objectives of this air monitoring plan are as follows:

- Provide real-time data to verify that dust controls and ACM abatement procedures are adequate to meet the applicable DALs and to protect Site personnel outside the work zone and in the surrounding industrial area;
- Provide information to be able to assess/modify Site activities, if necessary, based upon the results of the air monitoring; and
- Provide documentation regarding dust and asbestos fibers emissions and concentrations for the project records.

If this demo AMP is implemented during construction associated with implementation of the IRAW, the IRAW AMP may be in operation and some demo AMP activities associated with demolition will not be duplicated. In addition to outlining the procedures to be used for air monitoring, this demo AMP establishes CAL air concentrations for fugitive dust that will be

[1] Final Interim Response Action Workplan (IRAW), Standard Chlorine Chemical Company Site and Diamond Site, Kearny, New Jersey. Key Environmental, Inc. October 2008.

used to initiate stop work conditions and/or corrective action, as appropriate. These CAL concentrations have been developed for demolition of the buildings using available data and conservative approaches.

1.2 MONITORING PLAN ORGANIZATION

The Scope of Work and associated methodologies are described in Section 2.0. Section 3.0 provides air monitoring action levels for airborne dust and asbestos fibers based upon a comparative standard risk assessment calculation approach using the United States Environmental Protection Agency and NJDEP guidance to be protective of off-site receptors during active building demolition. Section 4.0 addresses recordkeeping and reporting requirements. One table, one figure, and four attachments are included to support this AMP.

2.0 AIR MONITORING AND SAMPLING

2.1 OVERVIEW

Real-time air monitoring for total dust and asbestos fibers will be performed during Site activities that will potentially generate dust and/or during ACM abatement activities, respectively. Activities when air monitoring will be performed include: demolition of buildings and associated materials; clearing of saplings, bushes and vegetation to gain access; asbestos abatement activities; materials movement activities and load-out of demolition debris for transportation off-Site; and final demolition clean-up operations.

Dust emissions will be monitored using a portable aerosol monitor, DustTrak, or similar. Asbestos fiber samplers will be collected using constant flow air sampling pumps, Gilian GilAir-5 or similar. Monitors will be positioned at the following locations:

Station	Approximate Location	Monitoring Objective	Station Type
1	The center of the western site boundary near the site access road	Upwind or downwind monitor contingent upon wind direction	Fixed
2	The center northern Site boundary of the Diamond Site AOC	Upwind or downwind monitor contingent upon wind direction	Fixed
3	At the center eastern edge of the SCCC AOC	Downwind or cross wind monitor	Non-Fixed
4	Near the southern border of the SCCC AOC and the adjacent Seaboard Site, south of the lagoons.	Downwind monitor	Non-Fixed

In general, a combination of two "fixed" stations, one located at the western SCCC Site boundary and one at the northern Diamond Site boundary will be used to monitor perimeter upwind and downwind conditions. In this context, fixed means mounted in place instrumentation rather than non-fixed or trailer-mounted instrumentation. The instrumentation may be repositioned as necessary. Instrumentation may be relocated if substantial interferences are noted as a result of anthropogenic background conditions (e.g., vehicular traffic on Belleville Turnpike and associated emissions and dust suspension or commuter train traffic and potential dust emissions). The locations were selected based upon: 1) the prevailing wind direction; 2) the location of potential offsite receptors (e.g., commercial/industrial workers to the west of Belleville Turnpike); 3) the location of potential disturbance areas (e.g., Building 16, 19 and 20); and, 4) accessibility issues.

Two non-fixed stations will be situated as perimeter monitors and these will be sited south and southeast of the buildings to be demolished. The locations of the fixed monitors and possible locations of the non-fixed monitors are shown on Figure AMP-01.

In the event that the site-wide construction activities associated with the proposed IRAW for the SCCC and Diamond Sites are on-going in conjunction with the Buildings 16, 19 and 20 Demolition activities, the AMP developed as part of the October 2008 IRAW will take precedent. Air monitoring locations and associated requirements outlined in the IRAW AMP would be used for monitoring of air emissions from the demolition activities as well as from IRAW activities. The separate asbestos fiber sampling program identified herein would still be implemented during the ACM abatement portion of the demolition work.

To support the air monitoring locations and tracking information, a meteorological station that records wind speed and direction will be operated during the building demolition and ACM abatement activities to provide information to identify appropriate monitoring locations. It will be the responsibility of the Field Operations Leader and/or Site Air Monitoring Technician to identify appropriate locations for the monitoring instruments on a daily basis and determine which stations are upwind and downwind. The instruments will be placed to accommodate the spatial orientations specified in the preceding paragraphs to the extent practicable. As demolition and ACM abatement activities continue, the locations of some monitoring stations may be modified.

Perimeter Dust Monitors will be set to alarm when the DAL is exceeded for a 15-minute time weighted average. Perimeter monitors will be set to send data recorded to the base station computer, so the air monitoring technician can identify potential exceedances and notify the work area supervisor to stop or modify operations to mitigate the condition or operation. The air monitoring technician or the designated field operations personnel will monitor the base station readouts for alarm conditions and respond accordingly.

Before the start of ACM abatement or demolition activities, baseline air monitoring conditions will be established by conducting a short-term air monitoring program for three or more days to troubleshoot the system and help determine variability of background ambient conditions. This pre-work monitoring will be conducted in the same manner as described in this demo AMP. Note that given the urban/industrial setting of the Site, there are numerous potential sources of emissions that could contribute to background, including but not limited to: adjacent industrial operations; vehicular traffic such as trucks, trains, and automobiles; ship and barge traffic; power generating station emissions; municipal incineration operations; land-filling operations, etc.

It is expected that the use of best management practices will control dust and asbestos fibers during non-work hours and that monitoring during off-work hours will not be required. Worker monitoring for dust will be performed using a real-time dust monitor in accordance with the HASP.

Concentrations of airborne dust and/or asbestos fibers above action levels per this demo AMP or the site specific Health and Safety Plan will trigger additional dust/asbestos fiber control measures, additional sampling, and/or use of respiratory personnel protection equipment.

2.2 SCHEDULE OF AIR MONITORING

Air monitoring will be completed as outlined in Table 1. Real-time dust monitoring will be performed continuously using monitors equipped with dataloggers to record and store the readings. Readings also will be recorded every hour in the field logs during demolition and materials movement activities. Upwind dust readings will be subtracted from the downwind and work zone readings to account for background dust levels.

Perimeter asbestos air sampling will also be performed during ACM Abatement activities. Air sampling will be performed daily and air samples will be delivered to the analytical laboratory for expedited analysis. Asbestos air monitoring results will be posted at the Site and/or with the Site Health and Safety Officer within 24-hours of receipt of sample results.

2.3 DATA EVALUATION – INTERPRETATION OF EXCEEDANCES

When evaluating alarm conditions that warn of exceedances of the DALs, the following actions should be taken:

- For the initial exceedance of a DAL, stop any on-Site work being conducted upwind of the monitoring station reporting the exceedence; determine the cause of the exceedance and take appropriate corrective action. Restart work only if dust is below the action level.

- For the next exceedance of a DAL, determine the cause(s), reassess the corrective actions, and maximize the corrective actions. Restart work only if dust is below the action level.

- If exceedances of the DALs continue to occur, stop all Site disturbance activities that may generate dust, implement additional or alternative corrective action, and re-evaluate the operations to establish a plan to minimize dust generation and exceedances.

- Investigation of the cause(s) of exceedances and implementation of corrective actions must be initiated within the shortest amount of time possible; no more than 30 minutes of identifying the exceedence.

- In the event that any air sampling results in excess of the DAL for asbestos (i.e., 0.010 f/cc) are reported for air samples collected during abatement, a more sensitive method will be required for confirmation to differentiate asbestos from non-asbestos fibers. While the confirmational analyses are being completed, re-evaluate and modify work procedures until acceptable results are received.

If continuous visible emissions are noted during the exterior work or if the asbestos-in-air concentrations exceed 0.010 f/cc over the measured background level, work will stop and

demolition and abatement procedures will be re-evaluated and adjusted as necessary to eliminate visible emissions.

2.4 CORRECTIVE ACTIONS

Short-term exceedances may occasionally occur that are caused by non-Site disturbance activities. If these exceedances occur they will be documented, the monitoring station reset, as needed, and the on-Site activities will then proceed. Appropriate action will be taken to eliminate the activity causing the exceedance. Reasons for anomalous exceedances may include vehicles and/or equipment idling near monitors, off-site background sources of contaminants, and equipment malfunction. Corrective actions may include moving the vehicle or equipment, resetting the monitors, moving the location of the monitors, and/or adjusting work practices.

The anomalous exceedances will be recorded as well as any implemented corrective actions. Corrective actions will be implemented as soon as practical.

2.5 BEST MANAGEMENT PRACTICES (BMPS)

Wetting down of building materials, including friable and non-friable ACM, with potable water during building demolition will be required to reduce the potential for dust generation and to help in meeting the action levels specified in this AMP. However, real time dust data and ACM sampling data will be available from monitoring of the work area as discussed above. A combination of the monitoring data and observations of the conditions (i.e., wet or dry) will be evaluated at the end of each day to determine if additional BMPs are necessary for implementation. Based on the daily observations, temporary stockpiles or other miscellaneous materials from demolition or Site disturbance activities will be wetted to control dust during non-work hours and over weekends. Tarps or dust suppressant foam may be used if water application is not effective. When not being loaded, the disposal containers for non-friable materials (e.g., roll-offs) will be covered. Friable ACM will be contained as outlined in the asbestos management plan.

2.6 INSTRUMENTATION

Weather Station
A weather station equipped with data logging capabilities will be used on-site to document weather conditions during demolition activities. Wind direction measurements will be used to situate the dust monitors and asbestos air samplers. A local wind rose (e.g., Newark Airport) will also be referenced to verify appropriate sample locations prior to initiation of sampling. Wind speed and direction will be noted on a site map (prevailing direction, date and time) prior to the start of monitoring each day and a wind rose will be generated for each monitoring day.

Dust Monitoring
Aerosol monitors equipped with a dataloggers will be used to obtain continuous real-time measurements of Site perimeter dust concentrations upwind (1), downwind (1), and cross wind (2) of the demolition activities. The instruments will be positioned on tripods or affixed to stakes

or existing Site physical objects (e.g., telephone poles, fence posts, etc.) at a height of approximately 5 feet above ground surface.

A DustTrak (Attachment A), or similar device, is proposed for dust monitoring. This device has a measurement range from 0.001 to 100 milligrams per cubic meter (mg/m^3) with a resolution of 0.001 mg/m^3. This measurement range is suitable for the action levels discussed in Section 3.0. Dust measurements will be made following the manufacturer's instructions for operation and maintenance. The complete manufacturer's operations manual will be available on-site. A spare dust monitoring unit will be kept at the Site to serve as replacement in the event that a primary monitoring unit becomes inoperable or is taken out-of-service for maintenance. In addition to manufacturer's instrument and equipment manuals, standard operating procedures (SOPs) will be followed for operation of the dust monitors as well as for operation of the air monitoring system setup, as a whole.

The data from the dust monitors will be sent wirelessly to a host controller and central computer that will display the data in real-time. If necessary, a signal repeater will be used to ensure that data is transmitted over the Site distances to the computer.

Each air monitoring station will consist of a SolarRAE (Attachment B) that will provide power for a dust monitor and an asbestos air sampler, as well as provide an environmental enclosure for the instruments. An omnidirectional inlet and inlet water vapor trap will be provided for the dust monitors to help alleviate the potential effects of humidity on readings. Each dust monitoring instrument will also be equipped with a wireless modem to allow real-time transmission of data to the base station (host controller and computer.) The modems can transmit data up to two miles to the base station, however, if Site terrain obstructs the transmission path a wireless transmission repeater will be used to relay the signals to the base station. The base station software is capable of monitoring the input of all the remotely located monitors.

If an exceedance of the DAL or other alarm condition occurs, the base station will alert the Air Monitoring Technician via e-mail to a cell phone or pager (or by direct observation of readings at the base station.) The Air Monitoring Technician will immediately verify the alarm condition by checking the real-time data on the computer and/or checking the affected monitor(s). Once an exceedance of the DAL is confirmed, the Air Monitoring Technician will notify the Field Operations Leader to discuss and implement mitigating activities as appropriate.

Asbestos Air Sampling

A Gilian GilAir-5, or similar, constant flow air sampling pump (Attachment C) equipped with an asbestos sampling cassette will be used to obtain samples of airborne asbestos fiber concentrations upwind (1), downwind (1), and cross wind (2) during workdays when asbestos abatement is performed. Additional asbestos air sampling may be performed in areas representative of the work zone according to the HASP. The perimeter asbestos samplers will be positioned similar to the dust monitoring equipment. The asbestos air samplers will operate using constant low flow air sampling pumps with a flow rate of up to 5 liters per minute (lpm). In general, four (4) samples will be collected daily around the ACM demolition activities using the four monitoring locations discussed above.

Asbestos air sampling will be performed following the manufacturer's instructions on instrument operation and maintenance. The manufacturers' operations manuals will be available on-site during the monitoring. A spare sampling unit will be kept at the Site to serve as replacement in the event that a primary sampling unit becomes inoperable or is taken out-of-service for maintenance.

Asbestos samples will be analyzed by the NIOSH Method 7400 Phase Contrast Microscopy (PCM). If fibers are detected above the DAL for asbestos using PCM then NIOSH Method 7402 Transmission Electron Microscopy (TEM) will be used according to the protocol described in OSHA 29 CFR 1926.1101 to confirm the presence of asbestos fibers.

3.0 AIR MONITORING ACTION LEVELS

This section establishes the air monitoring action levels for the demolition and abatement project for Building 16, 19 and 20. The Air Monitoring Plan in the approved IRAW (IRAW AMP) established air monitoring procedures and action levels for work in the specific areas of the Site, including the SCCC Area of Concern (SCCC AOC) where Buildings 16, 19 and 20 are located. The methodologies for determining contaminant action levels (CALs) and daily action levels (DALs) were based upon the constituent concentrations for samples collected in certain areas and were calculated using conservative risk based criteria, assumptions, and methodologies.

3.1 PERIMETER DUST ACTION LEVEL

In the absence of analytical data for building materials at Buildings 16, 19 and 20, information from the approved IRAW AMP was used to establish the perimeter action level for demolition activities. Soil data from the SCCC Area of Concern (AOC), adjacent to the buildings 16, 19 and 20, was used as a surrogate for building material constituent concentrations. It is expected that the SCCC AOC would contain constituents deposited from the adjacent building operations. Soil data from the SCCC AOC was used in the IRAW AMP to calculate a risk-based dust action level and a similar approach for building demolition is used here. This use of soils data is considered very conservative (protective) because the building concentrations would be expected to be less than the soil concentrations.

For the IRAW AMP detailed calculations were completed to derive particulate Contaminant Action Levels (CALs) in accordance with procedures under development by the NJDEP as set forth in the March 5, 2007 "Requirements for Revision of the Air Monitoring Plan"[2] for an adjacent site. These CALs were developed based on certain exposure assumptions, Site- and Media-specific Upper 95% Confidence Limits on the mean, Reference Concentrations, and/or Unit Risk Factors. Note that the dust action levels were determined to be extremely conservative (i.e., protective). The action limits were based on continuous, rather than intermittent exposures over the course of the exposure time (consistent wind direction), no atmospheric dispersion has been considered between the source and the receptor location, exposure has been assumed to occur for a year although it is unlikely that any individual excavation-based remedial component will take this long, either maximum concentrations or upper ninety-five percent confidence limits have been used to determine the action levels, and the lower bound of the EPA target risk range (1E-6) has been used to determine dust action levels for potential carcinogens.

For the SCCC AOC the action level for ambient air dust monitoring at the perimeter was calculated as 59 ug/m^3 + background, not to exceed 338 ug/m^3. This action level was based upon naphthalene as the constituent of concern and an exposure duration of 120 days. Using an exposure duration of 60 days for demolition activities, the CAL for naphthalene is 120 ug/m^3. Since Buildings 16, 19 and 20 were used in the manufacture of naphthalene; the use

[2] Koppers Seaboard Site, Remedial Action Work Plan Addendum (September 2007) Volume III-D, Requirements for Revision of the Air Monitoring Plan, March 4, 2008. E-mail from Chris Kanakis, NJDEP to Pete Sawchuck, Key Environmental.

of the adjusted IRAW AMP calculated dust level is considered appropriate.

Dust action levels have been established for perimeter monitoring such that 1) off-Site downwind potential receptors are protected from potential chemical risks, and 2) the contributions to particulate concentrations at the Site perimeter resulting from demolition activities do not exceed the calculated dust action level of 120 ug/m^3 plus background.

This conclusion is supported by the following considerations:

- The conservative nature of the health benchmark used to calculate the action level;
- The short term nature of the project; estimated to be 9 weeks (28-45 working days);
- Cancer risk, or chronic, exposure limits are lower than non-cancer, or acute, exposure limits, therefore the calculated health benchmarks and action level are also protective for non-cancer endpoints.

Daily Action Levels – Dust

Daily action levels (DALs) for use in evaluating the data from perimeter air monitors will be determined by adding the upwind background concentration of particulates to the CAL. Upwind background concentrations will be established before Site activities begin for each day of monitoring (approximately one hour before work) with the upwind background concentrations measured continuously during the workday. Mobile monitoring equipment will be employed as needed and locations will be adjusted based on the wind direction.

As shown, the upper ceiling for dust is 338 ug/m^3 based on an adjusted National Ambient Air Quality Standard for an 8-hour period corrected for a New Jersey measured annual ambient background level (NJDEP AMP guidance). The sum of 338 ug/m^3 and Upwind Background Level value will be used as the maximum (not to exceed) DAL for dust.

3.2 AIRBORNE ASBESTOS FIBERS ACTION LEVEL

Ambient air sampling for airborne asbestos fibers will be performed at the perimeter of the Site and demolition work area to screen for potential emissions of asbestos fibers. The perimeter air monitoring is in addition to the personal/OSHA air sampling that the Asbestos Removal Contractor will be required to perform on workers within work zones. The action level for total airborne asbestos fibers is 0.010 fibers/cubic centimeter (f/cc). This action level is based on 40 CFR 763 post abatement acceptable clearance criteria requirements for asbestos abatement projects.

The Contractor will be required to reevaluate the ACM abatement procedures and implement additional measures as necessary to eliminate visible emissions and/or lower the asbestos-in-air concentrations to below action levels. If visible emissions are noted during the ACM abatement work or if the asbestos-in-air concentrations are found to exceed 0.010 f/cc or the measured background level, all work shall be stopped and procedures evaluated.

3.3 PERIMETER VOCS

VOCs were not detected above Non-Residential Direct Soil Contact Criteria (NRDCSCC) in the SCCC AOC Area and are not expected to be present above the NRDCSCC in building materials.

4.0 RECORDKEEPING AND REPORTING

Records of all monitoring activities will be maintained in hard copy and/or electronic form. Recordkeeping and records to be maintained in the project file will consist of the following:

- Air monitoring field logs with the notes of daily activities, exceedances, corrective actions, sampling record sheets and other pertinent information;
- Electronic and hardcopy printout of the data logger results for the weather station, and dust monitors;
- Site maps with daily wind speed and direction, dust monitoring and asbestos air sampling locations;
- Site operational data related to the demolition, and ACM abatement activities;
- All exceedances of the DAL with a potential explanation for each exceedance and corrective actions;
- Daily wind roses;
- Chain-of-custody records for all asbestos perimeter air samples;
- Results of asbestos air sampling;
- Analytical data reports for laboratory analyses; and,
- Charts or tables of the daily dust monitoring results will be generated and maintained. These charts or tables will show the DALs and clearly note any exceedances. Notations will be added that identify the causes of exceedances and the corrective actions taken.

The field notebook will include airborne dust monitoring and asbestos air sampling information, correlations to the daily wind speed and direction maps, and specific notations of any measurements exceeding airborne dust and/or asbestos fibers action levels. The field notes will also include any corrective actions taken and subsequent monitoring results showing measurements below the action levels. Notations regarding visual dust, if present, will also be recorded. Potential equipment malfunctions, if observed, will be documented in the field logs.

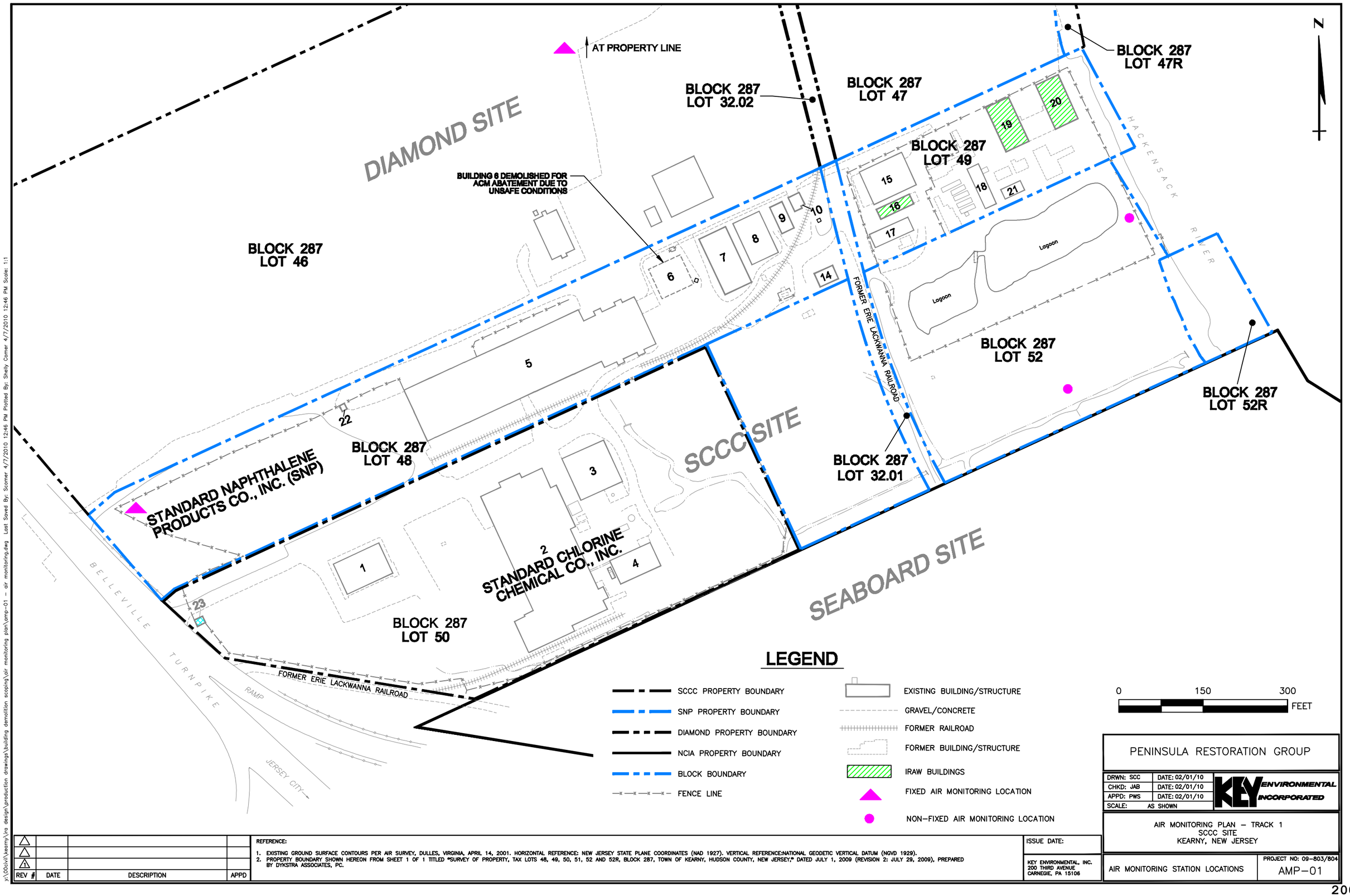
TABLE

TABLE 1

PROPOSED PERIMETER AIR MONITORING PROGRAM
BUILDINGS 16, 19 & 20
STANDARD CHLORINE
KEARNY, NEW JERSEY

Description	Monitoring Points	Monitoring	Monitoring Schedule	Action Level	Response
During demolition work and moving of associated materials	Site perimeter	Visual	Continuously during the work day	Visual dust	Stop work and implement additional dust control measures
During demolition work and moving of associated materials	Upwind, downwind, and cross wind	Real-time dust monitoring	Continuously during the work day	Dust 120 ug/m^3 plus Background	Stop work and implement additional dust control measures. Evaluate or test potential for naphthalene presence in dust. If not present, use 338 ug/m3 NAAQS adjusted for NJ
During ACM removal	Upwind, downwind, and cross wind	Real-time asbestos air monitoring	Collect samples during the work day	0.010 f/cc (ACM)	Reassess work or revise ACM control measures

FIGURE



LEGEND

- SCCC PROPERTY BOUNDARY
- SNP PROPERTY BOUNDARY
- DIAMOND PROPERTY BOUNDARY
- NCIA PROPERTY BOUNDARY
- BLOCK BOUNDARY
- FENCE LINE
- EXISTING BUILDING/STRUCTURE
- GRAVEL/CONCRETE
- FORMER RAILROAD
- FORMER BUILDING/STRUCTURE
- IRAW BUILDINGS
- FIXED AIR MONITORING LOCATION
- NON-FIXED AIR MONITORING LOCATION

0 150 300 FEET

REV #	DATE	DESCRIPTION	APPD
3			
2			
1			

REFERENCE:

1. EXISTING GROUND SURFACE CONTOURS PER AIR SURVEY, DULLES, VIRGINIA, APRIL 14, 2001. HORIZONTAL REFERENCE: NEW JERSEY STATE PLANE COORDINATES (NAD 1927). VERTICAL REFERENCE:NATIONAL GEODETIC VERTICAL DATUM (NGVD 1929).
2. PROPERTY BOUNDARY SHOWN HEREON FROM SHEET 1 OF 1 TITLED "SURVEY OF PROPERTY, TAX LOTS 48, 49, 50, 51, 52 AND 52R, BLOCK 287, TOWN OF KEARNY, HUDSON COUNTY, NEW JERSEY," DATED JULY 1, 2009 (REVISION 2: JULY 29, 2009), PREPARED BY DYKSTRA ASSOCIATES, PC.

ISSUE DATE:

KEY ENVIRONMENTAL, INC.
200 THIRD AVENUE
CARNEGIE, PA 15106

PENINSULA RESTORATION GROUP

DRWN: SCC	DATE: 02/01/10	KEY ENVIRONMENTAL INCORPORATED
CHKD: JAB	DATE: 02/01/10	
APPD: PWS	DATE: 02/01/10	
SCALE: AS SHOWN		

AIR MONITORING PLAN – TRACK 1
SCCC SITE
KEARNY, NEW JERSEY

AIR MONITORING STATION LOCATIONS

PROJECT NO: 09-803/804
AMP-01

200965

ATTACHMENT A

SPECIFICATIONS FOR THE DUSTTRAK

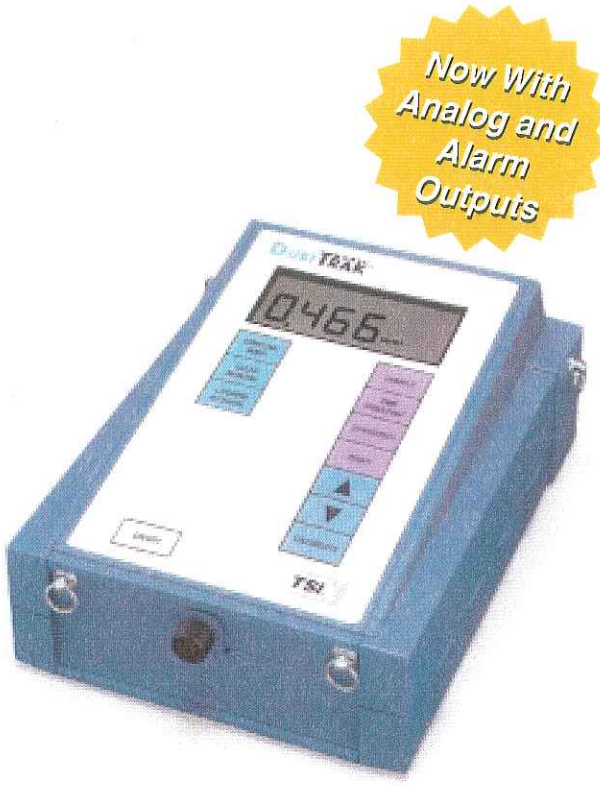
DUSTTRAK™ Aerosol Monitor

The DUSTTRAK™ Aerosol Monitor measures aerosols in a wide variety of environments, from offices and industrial workplaces to outdoor environmental and construction sites. TSI's DUSTTRAK provides reliable exposure assessment by measuring particle concentrations corresponding to PM10, PM2.5, PM1.0 or respirable size fractions.

The DUSTTRAK is a portable, battery-operated laser photometer which gives you a real-time digital readout with the added benefits of a built-in data logger. Suitable for clean office settings as well as harsh industrial workplaces and outdoor applications, the DUSTTRAK detects potential problems with airborne contaminants such as dust, smokes, fumes and mists.

The DUSTTRAK is easy to use, too. You can perform quick spot checks or you can program the advanced logging modes for long-term sampling. You can program the start/stop times, recording intervals and other parameters. You can even set up the instrument for continuous unattended operation.

The DUSTTRAK's new continuous analog output and adjustable alarm output allow remote access to real-time particle concentration data. Applications include site perimeter monitoring, ambient monitoring, process area monitoring and other remote uses. The alarm output with user-defined setpoint alerts you when upset or changing conditions occur. This feature allows you to program a switch closure at a concentration value of your choosing.



The DUSTTRAK provides a real-time measurement based on 90° light scattering. A pump draws the sample aerosol through an optics chamber where it is measured. A sheath air system isolates the aerosol in the chamber to keep the optics clean for improved reliability and low maintenance.

TSI®

200967

Specifications

Model 8520 DustTrak Aerosol Monitor

Sensor Type	90° light scattering
Range	0.001 to 100 mg/m³ (Calibrated to ISO 12103-1, A1 test dust)
Resolution	±0.1% of reading or ±0.001 mg/m³, whichever is greater
Zero Stability	±0.001 mg/m³ over 24 hours using 10-second time-constant
Particle Size Range	0.1 to approximately 10 micrometers
Flow Rate	Adjustable 1.4 to 2.4 l/min (1.7 nominally)
Temperature Coefficient	+0.001 mg/m³ per °C (for variations from temperature at which the DustTrak was zeroed)
Operating Temperature	32° F to 120° F (0°C to 50°C)
Storage Temperature	-4° F to 140° F (-20°C to 60°C)
Operating Humidity	0 to 95% rh (non-condensing)
Time Constant	Adjustable from 1 to 60 seconds
Data Logging	31,000 data points (21 days of logging once/minute)
Logging Interval	Adjustable from 1 second to 1 hour
Physical	
External Dimensions	8.7 in. × 5.9 in. × 3.4 in. (221 mm × 150 mm × 87 mm)
Instrument Weight	3.3 pounds with batteries (1.5 kg)
Serial Interface	RS-232 1200 baud
Power	
AC	AC adapter (included)
Battery	Four C-size alkaline batteries (included)
Battery Run-time	Alkaline 16 hours

Analog Output Specifications

Analog Output Voltage	0 to 5 VDC
Analog Output Scaling[1]	0 to 100 mg/m³ 0 to 10.0 mg/m³ 0 to 1.00 mg/m³ 0 to 0.100 mg/m³
Output Impedance	0.01 ohm
Maximum Output Current	15 mA

The DustTrak comes complete with TSI's TrakPro™ Data Analysis Software to allow you to perform a more comprehensive analysis of your measurement results. This exclusive Windows®-based program helps you generate the detailed graphs and reports needed to effectively communicate your findings.

Specifications are subject to change without notice.
Windows is a registered trademark of the Microsoft Corporation.

Alarm Output Specifications

Type	Non-latching, MOSFET solid state (polarized)[2] analog switch
Setpoint Range[1]	0.010 to 100 mg/m³
Maximum Voltage	15 VDC
Maximum Current	1 Amp
Deadband	-5% of alarm setpoint
Connector	4-Pin, Mini-DIN connector

1 User selectable through TrakPro™ Data Analysis Software.
2 See TSI Application Note ITI - 074 for important wiring information.

Ordering Information

Model	Description
8520	The DustTrak Aerosol Monitor and accessories includes: Auxiliary Analog and Alarm Outputs, Carrying Case, Alkaline Batteries, TrakPro™ Data Analysis Software, Filter, Computer Cable, 25-pin to 9-pin Adapter, Operation Service Manual, Calibration Certificate, 10 mm Nylon Dorr-Oliver Cyclone, Inlet Conditioning Kit 1.0 and 2.5 µm, Sampling Extension Tube, Miscellaneous Service Tools and Two-Year Warranty.

Optional Accessories

Model	Description
8520-1	Environmental Enclosure

TSI Incorporated
500 Cardigan Road, Shoreview, MN 55126 USA
Tel: 651 490 2811 **Toll Free:** 1 800 874 2811 **Fax:** 651 490 3824 **E-mail:** answers@tsi.com
TSI Germany—Tel: +49-241-523030 **Fax:** +49-241-5230349 **E-mail:** tsigmbh@tsi.com
TSI Sweden—Tel: +46-18-52-70-00 **Fax:** +46-18-52-70-70 **E-mail:** tsi@tsi.se

For current information www.tsi.com

CERTIFIED ISO 9001

P/N 2980077 Rev. C

Printed in U.S.A.

200968

ATTACHMENT B

SPECIFICATIONS FOR THE SOLARRAE

SolarRAE™

Remote Alternative Power Source

The RAE Solar Enclosure provides safe and reliable power generation without the expense of installing utility power. The solar system is designed to be used with AreaRAE wireless detectors or any RAE Systems wireless product including the MiniRAE, ppbRAE, MultiRAE, and ChemRAE.

SolarRAE provides remote power for RAE Systems monitors. Each system has an externally mounted 30-watt solar panel that provides power to a 55 Amp/hr sealed gel battery specically designed for solar systems. In addition, each solar enclosure is equipped with a powerful fan that automatically circulates cool air inside the enclosure when a specific temperature threshold is reached. Fully charged, a solar enclosure can provide up to 2 weeks of continuous usage with no additional solar input.

Key Features

- Ruggedized steel enclosure to withstand harsh environments
- Viewing window allows for local readings and alarm notification
- Powerful ventilation fan enables use in hot environments
- Large 55 Amp/hr gel battery specifically designed for solar applications
- Fully adjustable (tilt and rotate) 30W solar panel to maximize power output
- Fully adjustable external antenna to maximize radio transmission distances
- Lightning arrestor to prevent damage to internal components

SolarRAE is compatible with:

- AreaRAE series
- SentryRAE
- ChemRAE
- MultiRAE
- MiniRAE 2000
- pppRAE Plus
- MiniRAE 3000
- ppbRAE 3000

Additional Features

- Up to 2 weeks of continuous power with no sunlight
- Ruggedized steel enclosure
- Local viewing window
- 30W solar panel
- Fan to regulate internal temperature
- External fiberglass antenna

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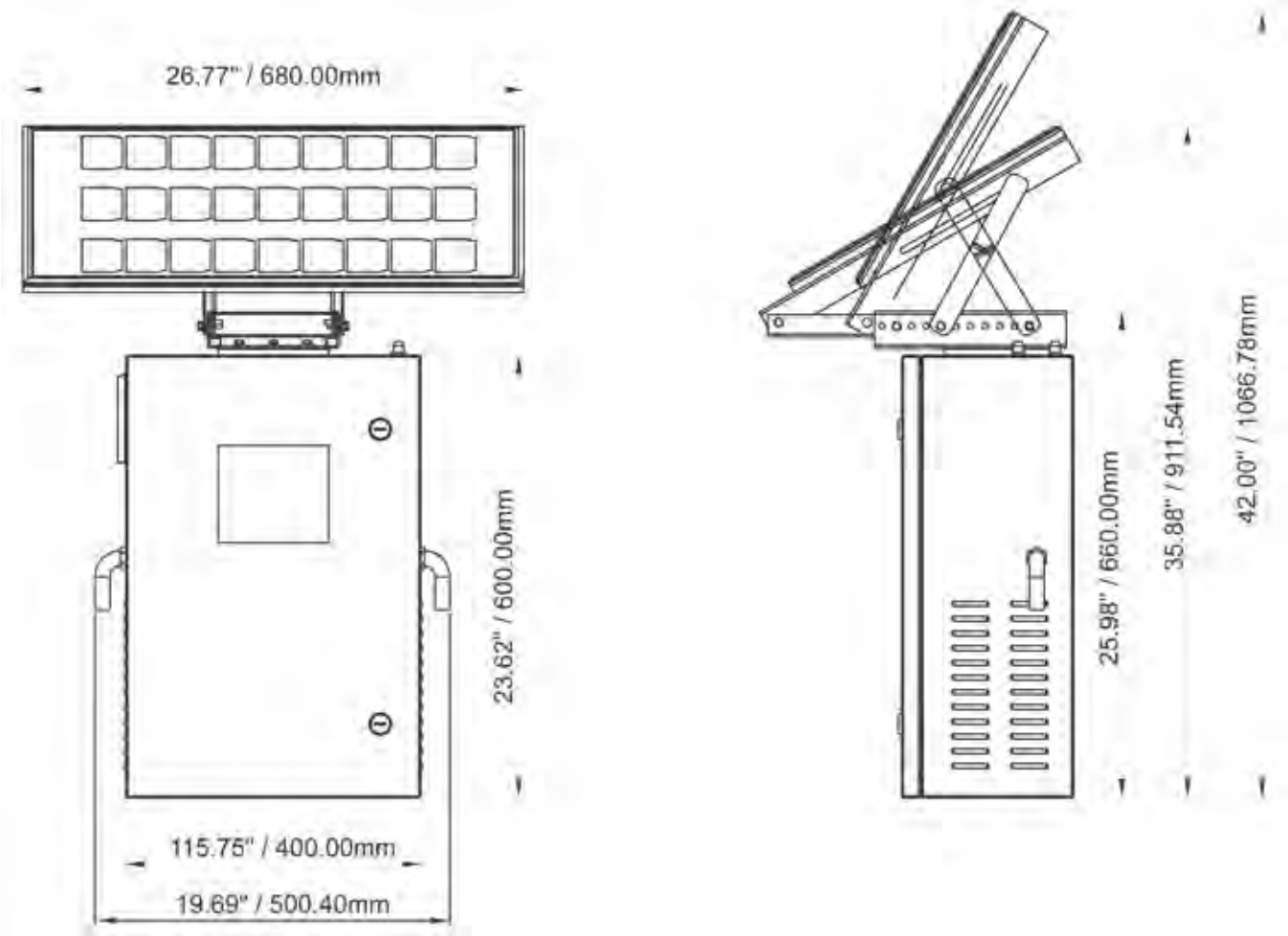
Specifications*

Size	20" W x 10" Dx 42" H (50cm W x 25cm D x 1065cm H) *see diagram below
Weight	70.5 lbs (32 kg) *not including battery weight
Material	Painted steel enclosure with and stainless steel components
Solar Panel	30 W peak output
Battery	55 Amp-hr sealed gel
Charging Controller	97% efficiency with included overcharge protection
Cooling Fan	Maximum airflow of 84 CFM (2.4 m^3/min)
Operating Temperature	-4° to 122° F (-20° to 50° C)
Pole Mount	2" to 3.5" diameter (5cm to 8.9cm)
Certifications	None

*Specifications are subject to change



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ATTACHMENT C

SPECIFICATIONS FOR THE GILAIR-5

SENSIDYNE®
Industrial Health & Safety Instrumentation

Gilian® GilAir-5

Constant Flow Air Sampling Pump

- **External Filter Housing**
  Clear External filter housing allows an immediate visual inspection of filter's condition.
- **Flow Fault & Test Indicators**
  Flow Fault indicator lights up if unit operates outside ± 5% of set flow rate. Battery Test indicator lights up when battery can provide a minimum of 8 hours of operation over operating range.
- **Basic, Clock, & Program Models**
  Basic model is easy to use. Clock model provides elapsed-time clock display. Program model provides auto start-stop and delayed start times up to 9999 mins.
- **Optional Low Flow Modules**
  Constant Low Flow module allows sampling from 5-500 cc/min. Constant Pressure (Multiflow) Module allows sampling from 1-750 cc/min.

Product Specifications

PERFORMANCE

Flow Range	1- 5000 cc/min (Total), 850 - 5000 cc/min (High Flow); 5-500 cc/min (Constant Low Flow); 1-750 cc/min (Constant Pressure)
Constant Flow Control	± 5% of set flow at 1000-5000 cc/min
Flow Compensation	5000cc up to 8" H20 back pressure 4000cc up to 18" H20 back pressure 3000cc up to 23" H20 back pressure 850cc up to 29" H20 back pressure
Run Time	8 hour minimum
Flow Fault	If flow changes exceed 5%, fault icon appears. If fault exceeds 30 seconds, pump shuts down. Pump attempts to restart every 3 minutes for up to 1 hour

ENVIRONMENTAL

Temperature Ranges	
Operating	32°F to 104°F (0°C to 40°C)
Storage	-49°F to 113°F (-45°C to 45°C)
Charging	41°F to 104°F (5°C to 40°C)
Humidity Ranges	
Operating	0-85 %RH, non-condensing
Storage	0-100 %RH, non-condensing

GENERAL

Display Messages	LAST, CAL, SHUT/OFF (Clock, Program); E, PC, P1-P6, OLD (Program)
Controls	Power Switch, Flow Control Screw & Buttons (Clock, Program), Programming (PROG) Button (Program)
Indicators	Elapsed Time (Clock, Program)
Icons (LCD)	Low Battery, Flow Fault, Clock (Clock & Program)
Dimensions	3.9W x 4.1H x 2.0D inches 10.0W x 9.0H x 5.1D cm
Weight	22.5 oz. (638 g)

ELECTRICAL

Battery Pack	UL: NiCad or NiMH ATEX: NiMH
Interface Connectors	Charging Jack
Charging Time	14-18 hours

APPROVALS/PERFORMANCE

CE	EMC EMI/RFI, EN 55 022 Class B; IEC 801-2, 3
Intrinsic Safety	
UL	Class I, Div 1, Groups A, B, C, D; T3C
CENELEC	EEx ia IIC T4 (ATEX models)

Ordering Information

Description	UL NiCad	UL NiMH	ATEX NiMH
GilAir-5 R Sampling Pump, Basic	800883-111	800883-171	810-0101-02
GilAir-5 RC Sampling Pump, Clock	800885-111	800885-171	810-0102-02
GilAir-5 RP Sampling Pump, Program	800884-111	800884-171	810-0203-02
GilAir-5 R Sampling Pump, Basic, Starter Kit, 120V	800883-111-1201	800883-171-1201	--
GilAir-5 RC Sampling Pump, Clock, Starter Kit, 120V	800885-111-1201	800885-171-1201	--
GilAir-5 RP Sampling Pump, Program, Starter Kit. 120V	800884-111-1201	800884-171-1201	--
GilAir-5 R Sampling Pump, Basic, Starter Kit, 230V	800883-111-2301	800883-171-2301	910-0101-02
GilAir-5 RC Sampling Pump, Clock, Starter Kit, 230V	800885-111-2301	800885-171-2301	910-0104-02
GilAir-5 RP Sampling Pump, Program, Starter Kit. 230V	800884-111-2301	800884-171-2301	910-0107-02
Single-Station Charger (120 VAC)	298-0006-01	298-0006-01	--
Single-Station Charger (230 VAC) [euro plug]	401225-1	401225-1	401225-1
Five-Station Charger (120 VAC)	850069	850069	--
Five-Station Charger (230 VAC)	850070	850070	850070
Replacement Battery Pack	800869	783-0009-02	783-0009-01
Low Flow Module, Constant Flow, Blue	800518	800518	800518
Low Flow Module, Multi-Flow, Blue	800519	800519	800519

Note: UL models available with with NiCad or NiMH battery packs; ATEX models come with NiMH.
For complete information on this and other Gilian products, please call 800-451-9444, ext 782 and ask for our catalog.

GilAir-5 Datasheet Rev. C 10.09.09

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